

MOSAIC AND FRESCO. BY C. HARRISON TOWNSEND [F.], MR. JAMES C. POWELL, MR. G. SALVIATI, AND MR. N. H. J. WESTLAKE, F.S.A.

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The President, J. Macvicar Anderson, in the Chair.

INTRODUCTORY.

MR. PRESIDENT AND GENTLEMEN,—

THESE is a peculiar and appropriate fitness in the consideration by the Institute, at the present time, of the allied subjects about which I am to speak to-night. I hope we are of those who look upon the art of our day, not as parochially divided by the boundary lines of nationalities, but as a movement, and a whole, exhibiting different manifestations under various governing circumstances and influences. And comparing, in this spirit, England with the other nations—her compeers, I will not say her rivals—we cannot fail to see that of the whole large territory of art there is one field in particular she has marked as her own domain. We whose work lies (as does my own to some extent) on the Continent have the opportunity of watching the growth of recognition—albeit more or less grudging—of the high position our English modern school of decorative artists is having ceded to it, as of right, in such crafts as, for instance, wall-paper and textile design, stained glass, carpet and tapestry weaving, and others of the “arts that wait upon architecture.” With all disposition for impartiality, it must be granted that a comparison between such evidences as the late Arts and Crafts Exhibition, and its French successor at the Grafton Gallery, leaves—notwithstanding much that can be said by way of adverse criticism against the former—a solid balance of weight in its favour. Many of the exhibits showed indeed “the Scholar’s, not the Child’s, simplicity;” but a reversion to even a borrowed simplicity is a relief, after two generations of ornament that was manufactured and not spontaneous—that was an unintelligent application rather than a natural growth. There were plenty of examples, as I say, of a pseudo-simplicity, an affectation, an eccentric disregard of precedent; but I think we could discern in them all, even in those we liked the least, that characteristic upon which is founded the reputation we, as a nation, have gained, and are increasing, for our decorative-art productions. I refer to the evident determination of the English craftsman of our day to master the principles and nature of the material with which he is concerned, to consider how these bear upon and influence his design, and, accepting them as canons absolute—limitations indeed, but not hindrances—to produce a work carried out in loyal submission to these conditions. In his stained glass he welcomes the lead-lines; he does not use it under protest and by stealth, as in so many of the Grafton Gallery examples. His wall-papers try for no fraudulent effect of hung tapestry; with his inlay slips of wood he tries to build no group of realistically treated flowers, no landscape full of atmospheric effects. He obediently accepts, I repeat, the limitations of his material, sure that by doing so his work can alone hope to be true and good and worthy.

We architects are willing—nay more, we are anxious, in growing measure—to relieve the grey gloom of our climate by the introduction of colour on the façades and the wall-surfaces of our buildings; and we hail with welcome such craftsmen eager to work out, and apply with conscience, proper principles in such arts as help us to attain that end. To both of us, architect and craftsman, the study of the two arts of Mosaic and Fresco comes laden with many possibilities of hope. One's regret to-night that either of the subjects by itself might well claim—and more—the whole of our time for its treatment is alleviated by the reflection of the advantage of considering them in their relation to each other, and as covering, practically, the whole field of pictorial decoration by means of figure-subjects. For I take it that it will be Mosaic of that kind rather than the pattern-work of ancient pavements that will be treated of on this occasion.

Mosaic is easily defined. It is the construction of a decorative design by means of small cubes, or tesserae, kept permanently in their position by means of cement in which they are bedded. This definition at once brings us face to face with the consideration of the question of how far, and in what manner, these materials, when properly employed, influence the design of the work we have in view. We can get large help in this inquiry by a careful study of the works of the past; and we shall find that the storeyed walls of Ravenna, Venice, Monreale, have a special and individual message to us students of Mosaic, besides and beyond that which they have uttered to the faithful for centuries past.

Considering, first of all, the cement, we find that the Roman formula was a very simple one, being a mixture of lime and fine brick-dust in the familiar proportion of three to one. A later formula is given by Ciampini in the seventeenth century, and, in this, Tiburtine marble-dust, in the same proportion as before, replaces the pottery or brick-dust. Two coats of cement were not looked upon as of necessity, but, when employed, the first contained pozzolana (which is a tufa substance found in the South of Europe) and brick-dust in the proportions of about two to one.

The contemporary references to Muziano di Brescia as “the first to execute oil-mosaics” do not accuse him, as has been supposed, of painting on his mosaics in an oil-medium, but are explainable by the fact that to him is due the replacing of lime-cements by those in which oil plays an important part. This notable invention meant that, in place of the three or four hours during which lime-cements set hard, the new material allowed the mosaicist as many days, with the further advantage that it was laid in one coat.

Modern workers vary greatly as regards the cement they use. Among the best formulæ is certainly that of Mr. Richmond, employed at St. Paul's, in which linseed-oil and wax are ingredients. Mr. Henry Holiday uses ordinary glazier's putty. Finally, as regards the cement, it should be the artist's endeavour not—as is so invariably done—to treat it as a surface on which the tesserae are applied, but as a material in which they are placed. He should regard the joints between the separate cubes, naturally resulting from the last treatment, as features of his design, and look to them to obtain a boldness of handling and vigour impossible if he places the tesserae absolutely close together.

However desirable, it is nevertheless not always possible to execute a mosaic *in situ*. The ordinary method, however, of studio-work—that is, to fix the cubes face downwards with gum on a reversed tracing of the subject—should never be adopted. In its place that called by the Italians *Mosaico a rivoltatura* should be employed. By this process the tesserae are laid, face upwards, in a bed of pozzolana, slightly damp, which forms a temporary joint between each cube. Coarse canvas is pasted on the work; it is lifted up, and the pozzolana brushed out of the interstices. On being applied to the wall-surface, slight pressure causes these to be filled by the cement and the whole work held firmly.

The manufacture of the smalto from which the tesserae are made is a subject on which Mr. Powell, who is to follow me, will, I hope, have much to say. He has removed from us the reproach (to which the French, as I learnt when I visited their Government Mosaic Studio last year, are still open) of being obliged to send to Italy for this material. And his firm has introduced certain very successful varieties, such, for instance, as the beautiful ranges of golds they are able to supply. The ordinary modern gold is distressingly dead and brassy in its effect, and is introduced with deplorable results in the works of restoration—*destruction* “the wise it call”—lately, and now, being carried out at St. Mark's and at Ravenna. Study, in connection with the treatment of gold backgrounds, the “Birth of the Virgin” by Orcagna in the Italian Court, South Kensington Museum. Here you will find all varieties of tones of gold, from the coppery to the bright yellow, that the tesserae are sometimes three-quarters of an inch square, and that the cement joints have sometimes a width of over one-sixteenth of an inch. Above all, a multitude of tints is to be avoided, and the twenty-five thousand boasted of by the Pontifical Studio in Rome are to be mentioned only with horror. A *scatola di degradazione* or colour-box of some thirty tints is amply sufficient for the purpose of the true mosaic artist.

Such then, the cement joint and the opaque glass cube, are the two factors, and the only two, in mosaic work. And what do they impose as conditions on the artist? The history of the art will teach us best, though I may say that this is a field that is left almost untouched, and that a worthy and comprehensive book on the history of Mosaic, read in the light of old examples, is a real want in literature. There is, however, reason to think that before very long this gap will be more or less adequately filled.

Some of the axioms that seem to be indicated by a study of what our predecessors have left us to profit by or avoid would seem to run as follows:—

1. The joint is an integral element in the structure of the picture. It should play its part in the design.
2. The surface should not be brought to a dead smooth level. Very beautiful effects are produced by the light as it plays on the variously set planes of the tesserae.
3. A minimum, not a maximum, number of tints produces the happiest result.
4. It should always be remembered that mosaic requires a simple, bold, uncomplicated treatment. It is to be seen and judged of from a distance.
5. There must be no introduction of aerial effects or atmosphere, nor a striving after realism. The work is decorative rather than imitative; and its figures, trees, and buildings are *symbols* only. In a word, so far as to express an idea in the most direct and absolutely simple way is impressionism, then and to that degree is the mosaic-worker a true impressionist.

As regards the second matter to be treated this evening, I can only presume that I have been asked to say something on the subject of Fresco because it has fallen to my lot lately to have to consider how, and by which of the various processes of that form of art, to arrange for a series of full-size figure compositions in a church I have lately finished. Fresco-work in England is (but need not be) of such rare occurrence that perhaps there may be some little interest in explaining briefly the method there adopted. Throughout the whole of the design of my little building I bore in mind the intention of decorating its interior in polychrome. As this treatment was to be its main feature, the exterior, for instance, was kept entirely plain and simple; and effect was gained by proportion and the colour-value of its material, rather than by any elaboration of detail or mouldings. In the interior the problem was to obtain, notwithstanding the unusual lowness of the building, a maximum amount of surface—not being a flat ceiling—upon which to execute a series of all but life-size subjects.

This the semicircular form of ceiling enabled me readily to do, the springing-line of which is but seven feet from the floor.

About half-way towards the highest point of this barrel-ceiling a moulding runs the length of the church, and, while it is proposed that the upper portion shall be enriched in plaster surface ornament and solidly gilt, the surface below this moulding to the springing-line is left free for the work of the Fresco-painter. Divided as it is by the "bonnet heads" over the windows, it resolves itself into a series of two large spandril-pieces on each side, and of a smaller one against the west and another against the east walls. So much for the surface at the disposal of the artist; now as to its method of treatment.

Fresco really means a chemical process successfully carried out. The artist and I had the great advantage, throughout the work of which I am speaking, of the assistance and advice of my client, Professor Roberts-Austen, Chemist to the Mint, and amongst the very highest scientific authorities. According to the system of Herr Adolf Keim, of Munich—which, by a process of elimination of the other methods, we were led to adopt—an ordinary rough-rendered plaster may be the starting-point. This was the case with us, though when one starts from the bare wall it is as well to dress it with a very thin foundation-coat of four parts of sand, marble-dust, and infusorial earth (that is, calcined fossil dust), well mixed together, to one of lime. Then on this is laid the first coat of rough plaster ready to receive the painting-ground. This consists of quartz-sand, marble-dust, and infusorial earth mixed together, and added in the proportions of eight parts to one of lime, and laid thinly, say about one-eighth of an inch thick. Throughout, care must be taken that the water is free of lime, to which end only distilled water should be used.

The under-coat and the painting-ground, or *intonaco*, being perfectly dry, a solution of hydro-fluosilicic acid is supplied, which prepares the material more readily to absorb two successive coats of diluted silicate of potassium, and the surface is ready for painting. The pigments have to be obtained from Herr Keim, or his London representatives, for they are all selected from the point of view of being equally acted on by the alkaline fixing fluid. This consists of silicate of potash treated with caustic ammonia and caustic potash, and is applied hot. It forms a film of carbonate of lime *plus* a silicate of calcium on the face of the work, which then presents a surface that is, from the chemist's point of view, impregnable to atmospheric attacks, and indeed to the action of acids or caustic potash.

So much for the process of which Mrs. Lea-Merritt, the artist, is showing her complete mastery in the series of Frescoes being painted by her in the little church I have alluded to. I thought you might forgive my exceeding my limit of time by describing it in detail, for I imagine that the principal function of these Meetings is to offer, and to avail ourselves of, the opportunity of sharing in experiences, an account of which may make smoother the path of some fellow-architect.

C. HARRISON TOWNSEND.

MOSAIC: ITS MATERIALS AND METHODS.

MR. PRESIDENT AND GENTLEMEN,—

THE subjects before you to-night are so vast and full of interest to the architect that I feel it very difficult to know how to deal with the one allotted to me—viz. the Art of Mosaic—so as not to waste the time at my disposal. With such libraries as are now available to most of us, it seems useless to launch out into an elaborate history of the art, and I need only give you my own experiences, and offer any suggestions that have occurred to me whilst studying this branch of my work. I do not propose to say anything about floor mosaics, or any kind

of marble mosaic, but to confine my remarks to the use of glass in the decoration of walls and roofs. At what time glass was first used for wall decoration it is difficult to say, but one of the earliest examples I am aware of is that which formed the decoration of the Villa Cassia near Rome, many fragments of which were found when excavating there a few years ago. The Villa, which is some four Roman miles from the Porta del Popolo, is said to have belonged to Lucius Aurelius Verus, son-in-law of Marcus Aurelius, and would date the work as belonging to the second century. This glass, some pieces of which I am able (through the kindness of Mr. Franks) to show you to-night, which is from three-sixteenths to one-quarter inch in thickness, is of varied colour, and worked into geometrical patterns like the drawing exhibited. The method of using it belongs more properly to the art of *opus sectile* than *opus tessellatum*, and I draw your attention to it because I think it was made in a manner similar to that which was afterwards manufactured for the mosaics of Rome, Ravenna, and elsewhere, though in this case the surface of the slab of glass was used, and not the fracture, as was afterwards the case.

MATERIALS FOR GLASS MOSAIC.

The glass, which is rendered opaque by the addition of oxide of tin, is coloured as required by one of the metallic oxides: this is melted in crucibles placed in the furnace, and when sufficiently fused is ladled out in small quantities on to a metal table, and pressed into circular cakes about eight inches in diameter and from three-eighths to half an inch in thickness; these are then cooled gradually in a kiln, and when cold are ready for cracking up into *tesserae*, which can be further subdivided as the mosaicist requires. It is the fractured surface that is used in mosaic generally, as that has a pleasanter surface and a greater richness of colour; the thickness of the cake, therefore, regulates the limit of the size of the *tesserae*, and the fractured surface gives that roughness of texture which is so valuable from an artistic point of view. I do not know what is the exact composition of the old enamel, but it seems to be about one part sand, one-third soda, one-sixth tin, and one-sixth lead. Oxide of tin is used for the whites because it gives the granular surface which is so pleasant; a pure white can also be got by the use of arsenic, and this is used for the enamel from which watch-faces are made, and the white enamel of thermometer tubes; it is much more brilliant and glossy in surface than the tin white, and for that reason is not so suited to mosaic work. Another white is got by the use of cryolite, which is composed of soda and fluor-spar. From the oxide of copper we get three colours; from a larger amount of copper and a lesser of the oxygen we get red, and with a less amount of copper, a green; and with still less copper and more oxygen is obtained that beautiful turquoise blue which the ancient Egyptians and Romans were so fond of using. From the oxide of cobalt come all the purple blues, from chrome a mustardy yellow, and from uranium a more orange yellow; but as this oxide is of only recent discovery, possibly charcoal as well as iron may have been the colouring matter of the old yellows. Text-books are fond of quoting antimony as the oxide from which yellow is produced, but we have never been able to obtain the slightest tinge of yellow from it. Gold produces the pinky reds, and flesh-colours are produced from very small proportions of it. Manganese gives us purple; and an excess of it, with the addition of cobalt, a blue black. The oxides of iron, platinum, and nickel are also used. For very small mosaic a cane can be made by gathering a small quantity of the enamel on the blowpipe, and shaping it by patting each side so that it becomes square, and then, by attaching to it another piece of molten glass, it can be extended by drawing it out whilst yet hot to the required substance, when it will still retain its square form. Another method of making enamel for mosaic work is in a manner similar to that described by Theophilus as the method of preparing glass for the *champlevé* and *cloisonné* enamels—viz.

by grinding glass to powder and fusing it in closed kilns in the shape of tiles or slabs of glass, the colouring matter being added in the same way to the base as with the other material, and by the use of the same oxides. The surface of these slabs is pleasant and of an egg-shell glaze, and can be used for mosaic, and has been used in some of the nimbi of the angels in the apse panels at St. Paul's, where shapes were required larger than the fractured surface would give; but the fractured surface in this material is still, I think, the best, and gives a more liquid colour than the face. This is the material of which the greater part of the St. Paul's work is being made, though both materials are employed. For the black outlines we find a glass made in the first-described way the best, and, contrary to the other colours, the surface gives a better effect than the fracture. In a case exhibited by us to-night are specimens of the colours that up to the present have sufficed Mr. Richmond for the St. Paul's work. When I was at the Venice and Murano Company's works at Murano, I was told they had made 37,000 colours and 400 shades of gold!

We must now turn our attention to another most important material for mosaic—viz. the gold. The way of making gold with us is as follows:—We first blow a thin sheet of clear glass; and on this is laid, with a little water, the leaf of gold specially beaten to the required thickness. These sheets of glass, with their gold leaf attached, are then taken to the furnace and made thoroughly warm on the marver, the side with the gold leaf being uppermost; molten glass of red, blue, or green colour is poured on them, and this unites at once with the thin sheet, and by pressure they are joined into one cake. Silver is made in a similar manner. If instead of white a tinted glass is used for the surface, you can, of course, alter the colour of your gold; for instance, a thin sheet of pink glass will give you a golden ruby. When gold was first made in this way I cannot say, but we find it in use in the fourth century, after which it was largely used in all mosaic wall-decoration: and no wonder, for the effects produced were most gorgeous. Perhaps it may interest you if I call your attention for a moment to those little plaques of gold, with subjects etched on them, which were found in the catacombs of Rome. Specimens of these, from the collection of Mr. C. W. Wilshire, are to be seen in the South Kensington Museum: these were made in a similar way. This process, known to the Romans, was used by them in the third century for the decoration of vessels of various shapes, and this, no doubt, led to the use of gold in their mosaics. It is, of course, of the utmost importance that the glass which forms the face and that of the back should be of the same composition, though differently coloured, or the two will not join entirely, and the front will flake away, and the gold leaf become exposed and disappear.

The gold cake made as above described is now manufactured with such precision that it is perfectly even both in surface and colour; and if used, as in so much modern mosaic, flatly laid, it will not give the effect one admires so much in the old mosaics, but will give more the effect of gold paper. Any one who has carefully looked at specimens of the ancient gold tesserae will have observed that many of them are imperfectly covered with the gold leaf, and that interstices occur in which the backing colour is seen showing through and influencing the tone of the gold; this, one might think, was due to imperfect manufacture—and to a certain extent may have been—but the old masters of mosaic knew what looked well, and did not attempt to improve away what was so useful. I found that by subjecting the gold cake to a greater and longer exposure to heat, the leaf of gold, although protected by its surface glass, contracted in parts and gave the interstices which showed through them the backing colour. Consequently, by using golds exposed in their manufacture to varied heats, and by using golds backed with different colours, a great variety of effect can be produced; and by placing the tesserae irregularly in the cement bed, so that the light strikes them at different angles, a gorgeous effect can be obtained much more like the old gold grounds. Then, again, gold subjected to a

longer heat must be more durable and less likely to perish through the surface glass becoming detached.

With such a field of materials—to which the ancients sometimes added white marble and cocola, mother-of-pearl, and, as in the case of the mosaics at Parenzo, whole oyster shells—it is not surprising that so many celebrated artists in the past tried their hand at mosaic art, failing or succeeding according as they were restrained by the limitation of the material.

Of the cements used for the fixing of the mosaic I need not say much, as excellent formulæ are given in different books; and I cannot do better than refer you to those excellent Papers read before the Society of Arts* by Mr. Harrison Townsend, in which he gave recipes of water and mastic cements. The latter of these we are using at St. Paul's. Its setting gives time for any alteration that may be necessary, but when once set it is impossible to remove without breaking away the tesserae and cement together, which we found on Mr. Richmond wishing to make an alteration some three or four months after the work was done.

METHODS OF WORKING.

In making the first sketch design for the decoration of curved surfaces, such as domes or vaults, it is best, I think, to prepare plaster models to scale, from which the exact effect of the work when executed in mosaic can be obtained, which would be impossible in a drawing on the flat, displayed in the usual way. I show some models that we have prepared for the decoration of a church, which are made to an inch scale; these are easily coloured on the plaster after it is sized, and perfectly easy to correct or alter as one goes on. The full-size cartoons are next prepared, and if the sketch models have been carefully completed, and the work is simple in character, drawings in black and white will suffice. As these drawings must be prepared on the flat, they will require fitting in position, if on curved surfaces, and making good before they can be worked from. For more elaborate work coloured cartoons will be necessary. For the work at St. Paul's Mr. Richmond has made his cartoons partly in pastel and partly in water-colour. Some of these were exhibited recently at the Arts and Crafts Exhibition. The cartoons are next carefully traced so as to transfer the design to the wall for the mosaicist to work from, and all is then ready to begin working.

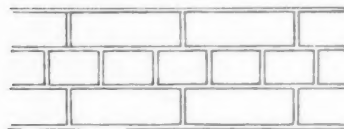
Now must be settled that most vital question in connection with mosaic: Are you going to work it tessera by tessera to the wall itself, or are you going to work it in a studio away from the place it is ultimately to occupy, and in a light different from that it will ultimately receive? I think there can be no doubt that the former was the way in which all the old mosaics were worked, and, from the experience I have gained, provided the artist can properly supervise the work, it is undoubtedly the best from every point of view. It is, I think, a quicker method, and therefore a cheaper way of working; moreover, what is more important, the mosaicist can see his work grow, and take a more intelligent interest in it, resulting in the display of an artistic feeling which with the paper methods it would be next to impossible to rouse. Another great advantage is that the tesserae are once for all placed in position by the mosaicist, and retain the inequality of surface given by the varied pressure of the hand, and the finished work has not the dead-level appearance usually presented by the other methods. Another process, where the former is not possible, is what is termed the paper process. Here the design is traced, and reversed on to sheets of paper or canvas, and each tessera is fixed, face down, with paste on to the tracing prepared; in this way you can see what you are doing only so far as the colours are concerned, because they are the same throughout; but that is impossible with the gold or silver tesserae, as their back is generally a red or blue glass, so you are entirely in the dark as to the general effect of your work. When all is finished, it is cut up into

* Cantor Lectures on "Mosaic: Its History and Practice," *Journal of the Society of Arts*, vol. 41, pp. 748, 772.

convenient-size pieces about twelve inches square, which are taken to the place they are to occupy, and fixed into the bed of cement, and patted into it till the cement sets; when firmly fixed, the front surface of paper or canvas is easily removed by damping it, and the face of the mosaic is seen for the first time. In this process it is almost impossible to obliterate entirely the joinings of the different sections, which is objectionable, and the finished work must retain the surface given it by the fixer, who is most likely not the mosaicist. Another method is described by Mr. Harrison Townsend in the Paper I have referred to, and is called *Mosaico a rivoltatura*; but in this, so far as I understand it, though the mosaicist is enabled to see what he is doing, yet the finished surface of the work would be the same as in the former method.

I had an experience of a somewhat similar method in carrying out the mosaic picture for Clifton College Chapel, designed by Mr. Holman Hunt, of the subject of Christ with the Doctors in the Temple. The drawing, which was done in water-colour, measured four feet by two, which was half the size the mosaic was to be; it had therefore to be enlarged, which was done by photography. Tracings on sheets of glass were made from the enlarged photograph, and on these were also shown the lines the tesserae were to take; these lines were all fixed by burning them on to the glass, so that they could be preserved when making any alteration to the work. The mosaicists then built their work on these sheets, fixing each tessera on a bed of whiting so that the work could be seen as it progressed. The design and colour of the water-colour picture were so complex that it was necessary to shape almost every tessera by grinding it on a stone; the high lights on the end of a nose, a knuckle, or a finger-nail were cut to the exact shape given in the picture. To do this it was necessary to use the smoother face of the glass, and not the fracture, which would have been too rough for work going so near the eye. When all was finished, strong linen was pasted over the surface of the mosaic, and when dry the temporary cement was removed from the back, and the mosaic was fixed, with its permanent bed of cement laid on a slab of slate, and finished with a smooth surface, rendered necessary by the great finish of the original picture and the position it was to occupy in the chapel—viz. some four feet above the sanctuary floor.

To refer again to the work at St. Paul's: the two spandrels over the arch of the first bay of the choir from east on the north side, and the two spaces on either side of the clerestory window above, were worked on slabs of slate scored across diagonally to serve as a key to the cement. The first two of these were worked in Mr. Richmond's studio at Hammersmith, so that he might work on them himself, and explain to the men his views how the tesserae should



SIR C. WREN'S BRICKWORK AT ST. PAUL'S.

Stretchers, 8" x 2½"; headers, 3½" x 2½".
Joints, one quarter inch.

be laid. The other two were done at the Whitefriars works. The mastic cement was first worked on to the slate, and on that the outlines of the design were transferred from the tracing, and the tesserae worked in one by one, so that the same surface was obtained as though it had been worked on the wall direct, and in this way the men could see exactly what they were doing. These slates were then taken to St. Paul's and fixed in their places, the wall being first of all cut back so that the face of the mosaic should be the same as the previous wall-face. The slates were first fixed to the wall with the mastic cement, resting on slate blocks fixed into the wall, and fitted into holes cut in the slate slabs, and they are screwed and cramped into the wall as well; the mosaic was then worked over the joints of the slates and all was finished. But when seen in their places, though they had looked all right in the studio, it was found that they were not nearly bold enough in outline, and it became necessary to strengthen the effect of the mosaic by adding black outlines round the figures and strengthening

the lines of the drapery, showing that it is almost impossible in such work to gauge the necessary strength when done apart from the surroundings and in a different light. Mr. Richmond then wisely determined to work everything *in situ*, and direct on to the wall itself. On the curved surfaces, such as the shallow eastern dome of the choir, the four pendentives and three apse panels, the plaster was removed and the most beautiful brick-work revealed [see diagram], which has formed an excellent key for the cement. On all the vertical stone panels the face has been removed and a rough surface left to provide a key for the cement.

With a few suggestions I will close what I have to say. In the first place, if mosaic is to flourish and become one of the recognised means of decoration in this country, we must study where to place it to the best advantage in our buildings, and this must not be too near the eye, where fresco and painting will look better. In the old churches of Italy you seldom find it lower than twelve or fourteen feet from the floor-line; at Ravenna, in the Church of Sant' Apollinare Nuova, the celebrated processions of saints on the side walls of the nave are twenty feet from the floor-line; in the church at Monreale the mosaic is at about the same height, all below being lined with slabs of marble divided by bands of geometrical mosaic like the work of the Cosmati, which can always be used low down, being so elaborate in detail, and generally worked with the surface of the sheets of glass. Let our designs be broad and simple, and the draperies designed so that they can be worked in lines of tesserae; use the joints of the cement, like the lead-lines in stained glass, so that they will assist the drawing, and do not try and disguise them. In coloured grounds you can make them play an important part; by widening the joint and showing more cement you can grey your colour, or by not letting the cement show on the surface you can get a dark joint and strengthen your colour; this is the case in some of the blue grounds at Ravenna. If you are using gold for the grounds of your design, spread it over all parts of the work, such as patterns on the dresses, the high light of a wing, or in flower or fruit; in this way you soften the effect of the outlines, and prevent the object in your design forming silhouettes on the gold ground. Outline all the forms in your design with a row of one or two tesserae, but over the rest of the ground place them in various directions as may suggest themselves to the mosaicist. Wavy or scolloping lines look well. To emphasise figures or other objects in your design you can outline them with black and blue, or black and red or brown, according to the local colour and the strength you wish to give your work. For work to be seen at a great distance and placed next to gold you can use a black outline an inch in width. Gold will always eat through your colour and lessen the strength of it, much as white will do in stained glass.

The size and shape of the tesserae are important, and will be controlled by the necessities of the design, and the distance the work is to be seen from the eye. As the fracture of the glass is what is used, the thickness of the sheet or slab of glass will also control it. At Ravenna a tessera three-eighths of an inch square is an average size, but in the mosaic over the altar in the chapel of the Archbishop's palace the tesserae are one-fourth of an inch. This is one of the very few examples of ancient mosaic placed near the eye. In the Baptistery of Florence the tesserae of the dome are small, about one-fourth of an inch, and some of the black outlines one-eighth of an inch only. The shaping of the tesserae should not, I think, be roughly or carelessly formed, but should preserve a certain neatness which would look workmanlike, but at the same time not mechanical. For outlines it is useful to have pieces in length two and even three times the width of a tessera: it gives a pleasant variety. Examples of these can be seen in the original mosaic by Orcagna in the South Kensington Museum. The tesserae should also be carefully laid in the cement bed in a workmanlike fashion, beginning with the outlines and then filling in.

Do not use a great number of colours : all the best decorative work of the old masters is produced by few rather than by many ; and the skill of the artist will be shown in this. With five colours good flesh-work can be produced. Do not attempt pictorial effects such as are easy to do in painting, but which can only be obtained by immense labour in mosaic, and which when accomplished seem to be spoilt by the jointing of the tesserae ; this has led the Vatican mosaicist, to my thinking, into such pitfalls of misplaced art, in those copies of the pictures of the great masters of Italy, which are placed immediately over the side altars of St. Peter's. On account of their nearness to the eye, it has been necessary to destroy the fractured surface of the tesserae by rubbing the whole surface down to a smooth face, and filling in the joints with wax coloured to match the surrounding colours. I believe the general opinion of these copies is that they are bad pictures and bad mosaics, and that they will only hand down to posterity a false impression of their magnificent originals.

JAMES C. POWELL.

MOSAIC IN GENERAL, AND THE LATE DR. SALVIATI'S WORK.

MR. PRESIDENT AND GENTLEMEN,—

IN responding to your kind invitation to give a short lecture on Mosaic, I feel I have undertaken rather a difficult and delicate task—first, because the subject has been already treated by other more competent authorities ; and secondly, because I could hardly do so without acknowledging how much we are indebted for the revival and the improvement of this art to the researches, study, and most devoted perseverance of my late father. I have, therefore, to ask your kind indulgence in my effort to contend with these difficulties.

By the term "Mosaic" is meant a work formed by the use of a number of separate pieces, varying in size, of a hard and durable material. Sometimes these pieces are of marble, sometimes of enamel—improperly described as glass ; and being of different colours, forms, and sizes, they are made to produce more or less successfully, according to the skill of the workmen in dressing and joining them, the same result that the painter obtains by means of his pencil and brush. These pieces, when placed together, are fixed on cement, the nature of which differs according to the various kinds of work to be executed, and the composition of which has varied considerably at different times and places ; and when so joined, the whole forms one solid and uniform body of unquestionable durability.

Mosaics, as they are used and manufactured in the present day, are of two kinds. The one (like that made up of different coloured woods) is known as "inlaid" or *marqueterie* mosaic, and is so manufactured that the surface of the work is thoroughly smooth ; a result produced by placing the edges of the stone or enamel pieces perfectly close and adherent to one another, and subsequently rubbing and polishing the entire surface. Such kind of mosaic is generally used in the production of personal ornaments, such as brooches, earrings, or bracelets ; or objects of house decoration, as tables and other articles of furniture. In this way are worked the fine "Florentine" mosaics, which are made up of stones, some of them precious, such as "lapis lazuli," "malachite," &c. The "Roman" mosaics, too, are of similar nature, although representing more especially (and often with extraordinary effect) landscapes, fruits, flowers, views, animals, &c., as they are manufactured of very thin pieces of enamels of numberless colours, rubbed and polished. The Venetians also work in the same way, when they intend to produce similar fancy articles, by using smaller or larger pieces of enamels according to the different patterns, which are generally of a polychromatic and geometrical character.

The other kind of mosaic is made by using stone or enamel pieces cut into irregular shapes, which are then put together, more or less closely to one another, so that between them the joints are seen. It will be at once understood that the work does not look smooth, but rough. In this case the style of mosaic is known as *Monumental* or *Byzantine*. This was the kind used by the ancients, and is the most fitting, and that generally adopted, for the purpose of architectural decoration, both for the interior and exterior of buildings.

Although learned writers differ much as to the time and place of the origination of the art, there can be no doubt that it was known and practised at a very remote period, for we read in Holy Writ (Esther, chap. i.) that a pavement formed of pieces of various colours was a feature of the magnificent decorations of the palace of King Ahasuerus. Doubtless, mosaic was first used for pavements, and was made wholly or in part of marbles and precious stones. Mosaic made of these materials was known either as *Lithostratum* or *Opus tessellatum*, *vermiculatum*, *Alexandrinum*, according as it was formed of large or small pieces and represented figures or otherwise. *Lithostratum* mosaic was composed of tablets of marble, sometimes interspersed with precious stones, on which no figure was shown at all. Ciampini, in his work *Vetere Monumenta*, affirms that the first example of such mosaic floors was in Persia. Against this opinion we have the statement of Abbot Hasselin upon ancient mosaics, that they had their origin in Egypt. Laborde states that the practice of embellishing pavements with rich and precious stones was followed in Eastern countries before it made its appearance in Greece.

It would seem that the earliest tessellate mosaic (composed of small pieces of marble) was made in Greece, and some authorities assert that its inventor was Sosus of Pergamus, who executed that charming mosaic, now in the Museum of the Vatican at Rome, of which Pliny wrote: "Celeberrimus fuit in hoc genere Sosus. . . . Mirabilis ibi columba bibens et aquam umbra capitis infuscans." Historians assert, however, that the mosaic pavement of the Temple of Olympia was executed at least two centuries before the time of Sosus of Pergamus; and much praise is due to Parnesus, who decorated with mosaic the temples of Jupiter at Olympia and of Minerva at Elis. The ancients well knew the advantage of colours, and the prominence that should be given to them in architectural decoration, and therefore, having used marbles of different colours and painted substances without being able to obtain the effect they desired, they became aware of the necessity of discovering some other materials for the purpose of mosaic in order to obtain those varieties of tints and shades which natural substances could not supply. Thence arose the use of coloured glass, first transparent, then opaque—that is, enamel—as the fittest material for obtaining the desired advantages, and also for its power of resistance to atmospheric attacks. Pliny calls this, a new invention of its time, "e vitro novitium et hoc inventum."

The next step in improvement was with the view of producing more striking and brilliant effects, and for this purpose the ancients thought of incorporating the precious metals; but as this would be beyond measure expensive, a simple means of obtaining similar results was invented, and thus gold and silver enamels were introduced into mosaic works. These enamels are, in truth, made of the precious metals, but in such thin sheets that their use is comparatively inexpensive. The process is a difficult one, for to produce true gold and silver enamels, great knowledge and experience are necessary. As everyone does not possess a clear and distinct knowledge of the difference between *coloured* and gold and silver enamels, it may not be out of place to say a few words upon the subject.

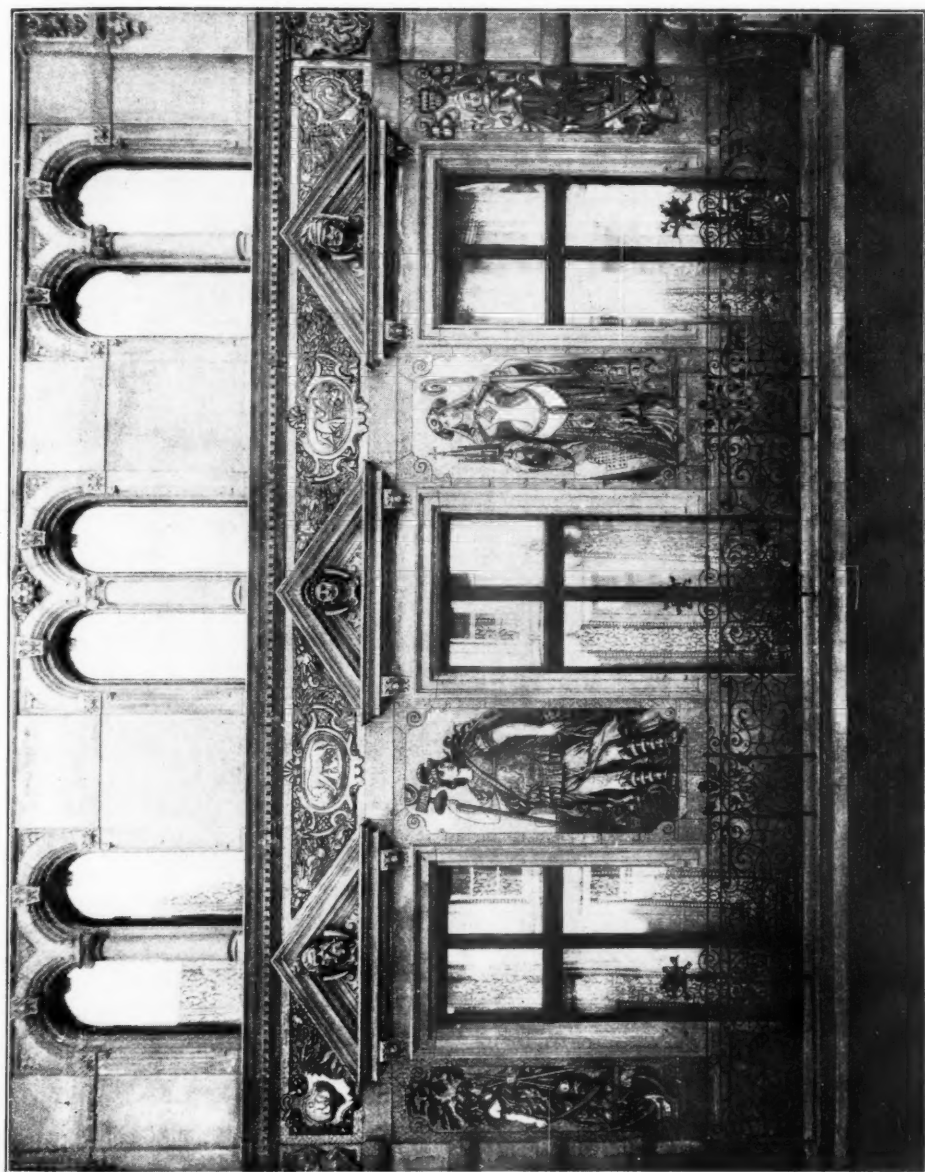
Coloured enamels are made of vitreous paste. They are formed of the same silicious and other materials of which common glass is made, but to these materials are joined other mineral elements, which, when fused along with them, impart to the vitreous paste its density

and its colours. In this way the greater or less degree of opaqueness, purity, and solidity of the enamel, the quality and beauty of its colours, and even the most varied and endless shades of the same tint, are all dependent on the quantity and quality of the mineral elements aforesaid in union with those of common glass, and on the degree and continuance of the heat to which the whole composition is subjected in the furnace. Gold and silver enamel, on the contrary, is the result of a very different operation. On a ground consisting of a thick layer of glass or enamel (according as it is intended to render the gold enamel transparent or the reverse, or to impart to it a warm or variegated colour), there is laid and attached by the action of fire a sheet of gold or silver leaf; then a coating, almost as thin as a hair, of the purest glass, which may be either colourless, or of any shade of colour desired. Thus, these three layers fused together become perfectly united and form a single body. Should the fusion be completely successful, the metal will be permanently protected against all possibility of injury from exposure to the air, from dust, from gas, from smoke, from insects, and in such a way as to lose nothing of its purity and splendour. When this most delicate upper coating of glass possesses the requisite fineness and purity, and when the entire extent of the sheet offers no inequalities of thickness, the gold or silver appears in all its natural beauty, and the glass with which it is covered is scarcely discernible at all. When the reverse of this is the case—when the gold remains, so to speak, entombed between the upper and under layers, and does not present an even surface—then the eye becomes arrested by the glitter of the glass rather than the brilliancy of the metal, and the mosaic-work bears the utterly false appearance of being varnished over. These explanations will show that the manufacture of enamels for mosaic is attended with very considerable difficulty and inconvenience, and that to obtain ease and certainty in their production, according to the purpose they are destined to serve in imparting to mosaic-work an effective and pictorial appearance, coupled with the utmost durability, not only is a knowledge of general principles in their manufacture necessary, but also long experience and continual and laborious experiment.

In speaking of *coloured enamels* it should be explained that it is very difficult to produce in an exceedingly hard and vitreous material the many beautiful and delicate shades of colour required to impart to mosaic-work the identical effect which the painter obtains simply by the use of oil or water colours, and also to avoid those faults which would eventually affect one of their chief requirements—viz., durability.

With regard to gold and silver enamel, it must be remembered that the whole process has to undergo the action of the fire, and that it is extremely difficult to protect the delicate gold leaf from becoming disturbed, or torn, or crumpled, and to guard against the introduction between the glass and the metal of minute bubbles of air, the effect of which would be sooner or later to separate the delicate film of glass from the metal; nor, again, is it an easy matter to give the surface of the enamel tablet the smoothness and evenness required, with an entire absence of waving lines or sinuosities of any kind. But suppose the manufacture of the enamels to be in every particular in accordance with the requirement of the mosaic art, and that they are used by a skilful craftsman, then there can scarcely be conceived a more perfect, everlasting, and exquisite means of decoration, which can be made subservient to architectural design either in the interior or exterior of buildings. In *The Stones of Venice* Mr. Ruskin says:—"There are two means of delight in all productions of art: colour and form; the "most vivid conditions of colour obtainable by human art are those of works in glass and "enamel." In consequence of the peculiar excellence of the material elements, and their capacity for imparting to any mosaic-work the effect of painting and gilding, this art is admirably adapted to every mode of artistic expression, handing down to remote generations, in the most durable, magnificent, and expressive form, all the sacred memories of the past,

in a language which cannot be effaced so easily as that spoken by painting or engraving, or indeed by any other known method of decoration. Should the interior or exterior of a mosaic



MOSAIC OF THE FAÇADE OF THE JUSTIZ PALACE, COURSE. EXECUTED BY THE "ANTECESSOR" MAISON, DR. AL. SALATIARI, FONDÉE EN 1854, FROM THE CARTOONS OF
 M. O. LESSING. MESSRS. KAYSER AND HIRSCHMANN, ARCHITECTS.
 The Figures represent Labour, War, Religion, and Art.

picture become dirty or dull through the action of gas, damp, smoke, or insects, it may easily be washed, and the whole work made as beautiful as when originally fixed, and without in any way altering or injuring its value. Now, in the case of an oil or fresco painting which may

have been damaged or almost destroyed by the action of time or other external influences, this process of restoration cannot be employed, as the work could never be brought back to its original freshness and beauty.

With the rise and spread of Christianity the art of Mosaic entered on a larger and grander field, and received a new life. It became a powerful means of supporting the dogmas of the Christian faith, and in course of time grew to be a real and true Art in itself. Here again we find mosaic mostly encouraged and advanced in the East, especially by the Emperor Constantine, who authorised the prefects to spend immense sums of money in building churches and decorating them with mosaic. Superior to all other, we see the grandest model of Byzantine building, the Church of St. Sophia, filled with mosaic. In England examples of enamel mosaic are very few and of one period (thirteenth century), being found in Westminster Abbey, on the tombs of Edward the Confessor and Henry III., and on that of the son of William of Valence, all made by Italian artists. There is, however, a greater quantity of tessellate mosaic (*Opus Alexandrinum*) used in the earliest times for pavements, as, for instance, those at Westminster and Canterbury.

The home of mosaic, however, in nearly all ages seems to have been Venice. There the art, expelled from Byzantium, found a shelter, and a wider field for its development. There Greek artists founded schools for the practice of mosaic, teaching the Venetians, and imparting the skill to produce works to willing scholars, who soon became greater than their masters. There was the glorious basilica of St. Mark, which during many ages was being covered with masterpieces of mosaic decoration, and which has become a marvel of beauty, richness, and originality—all who have seen, all who have spoken and written about this church have told how charmed they were with it; for, while presenting a collection of many styles of architecture, it also enshrines every possible example of mosaic decoration from the middle ages down to our own time. "Never had city a more glorious Bible," wrote Mr. Ruskin in *The Stones of Venice*; and Street, in his work *Brick and Marble*, says: "Over and over again "when at Venice must one go into St. Mark, not to criticise, but to admire."

But even in Venice the age of glory and prosperity was not to be perpetual. There came a time when the Queen of the Adriatic declined, and the sunset of her political and industrial day was also the time of decadence of the mosaic art. When at length the Republic died, the art which had taken such deep root there fell into lethargy. But it was not dead. The elements of its existence and prosperity were not so much dependent on political changes as they were bound up with the nature and spirit of the people, so that they were capable of being awakened and directed towards a noble and successful purpose, which aroused among civilised nations a warm and powerful agency in aid of art and true religion.

Such were the thoughts and incentive of my late father, Dr. Salviati, when he witnessed the rapid decay, for want of repair, of this beautiful art. Enkindled by a desire to revive it in Venice, he abandoned his lucrative profession in the Forum, and directed all his energies and his capital to the development of the ancient famous Venetian manufacture of gold and coloured enamels, enlisting in his aid the skill, practical aptitude, and long experience of an artist in Murano, who had spent his life and fortune in making a series of experiments, and who thoroughly succeeded in maintaining and improving upon the ancient method of making enamel. His next step was to found a School of Mosaic, selecting the chief artists from the School of Painting of the Venetian Imperial-Royal Academy, while the artisans were taught the principles of geometry and drawing. He next undertook journeys to distant parts in order to study the best examples, and to be in a position to instruct others and assist in their continual improvement. Many and many were the obstacles to be overcome before he could hope to realise success; but the most serious one was the cost of manufacture, which, according



MOSAIC OF THE DOME OF THE CATHEDRAL OF AIX-LA-CHAPELLE, EXECUTED BY THE "ANCIENNE MAISON, DE. A. SALVIATI, FONDÉE EN 1859," FROM THE CARTOONS OF BARON BETHUNE.

Plans and a Section of the Cathedral of Aix-la-Chapelle are given in Isabelle's *Les Edifices Circulaires et les dômes, classés par ordre chronologique*. (Paris 1855. Pl. 54-55.)

to the old system, was of so elaborate and expensive a character as to prevent the more general employment of this form of decoration.

The old mosaics were worked on the spot they were destined to decorate. The mosaicist, having prepared the surface of the wall and covered it with a layer of cement, produced his subject by putting on the enamels piece by piece; it will be readily seen that this system of working occupies necessarily a long time, and entails considerable cost. It is not to be wondered at, therefore, that people in modern times have been alarmed at the probable expense of the work, and to this cause we must attribute the decay and long dormant condition of the art. The method invented by Dr. Salviati is far simpler, and by it we are enabled to produce mosaic work in our establishment in Venice so that it can be conveyed to any place for which it is intended, ready made and quite prepared to be immediately fixed on the cement, whether the position be circular, horizontal, or perpendicular. The subject, after being designed upon paper, is cut into various pieces, which are distributed to different artists, each of whom is employed in covering with mosaic such part of the general subject in which he is specially skilled. These pieces are worked upon paper on the reverse side, and when finished they are packed in cases and sent to the place intended to be decorated. Here the subject is again put together and fixed in the cement on the spot.

Doubts have been expressed whether mosaic work for exterior decoration will stand a northern climate, especially that of England. I can speak with positive certainty that there are no grounds whatever for apprehending danger. As far as the enamel itself is concerned, if it be well made, it is absolutely indestructible. What influence can affect it? Not cold or frost, nor rapid changes in the state of the weather; these could only affect materials extremely expansive; but the good enamel which is used has, perhaps, less tendency to expand than any other material. The damp cannot injure it, because it is less porous than clay, stone, marble, &c., and I can bring forward many instances in which the marble has decayed, but the mosaic remains as good as new. If danger is apprehended from smoke, dust, &c., enamel has a peculiar claim to be preferred to other methods of coloured decoration, for it can be easily washed and cleaned. It will suffice to mention one example only, which stands before the eyes of everybody, namely, the mosaic which my late father was commissioned by the late Sir Gilbert Scott to execute for the decoration of the Albert Memorial in Hyde Park. This mosaic has stood exposure to the weather for over a quarter of a century, and affords one of the best evidences of its durability.

G. SALVIATI.

MOSAIC AND FRESCO: ARE THEY LIVING ARTS?

MR. PRESIDENT AND GENTLEMEN,—

MY intention to have given you a short Paper on Mosaic and Fresco, in response to your kind invitation, has been frustrated by an illness; but I promised to write a few notes, and herewith send them. Before, however, commenting on the best way of recovering these Arts practically—and I speak from some experience, having for thirty years been connected at various times with important works—let us ask ourselves three plain questions:—

1. If it is possible really to revive Mosaic and Fresco, to make them living arts, and not archæological studies?
2. If it is possible—whether they are the most suitable art media for the climate and the modern condition of arts?
3. Or, whether the more modern methods are not the more durable in this country, as far as their durability can be measured?

The first and second questions involve some sentiment in their consideration; the third is a mere question of fact from ascertained data. Concerning my first point, is there sufficient scope and patronage to support them, even if it were possible to revive Mosaic or Fresco, and to found a big school wherein successive students and masters may thoroughly enter into the work, and in course of time learn to design and manipulate works full of brain and heart, using these methods of art with facility, as though to the manner born, not, as I have said, only as archaeological studies?

Concerning Mosaic, I have worked in connection with many earnest, intelligent attempts to revive this since 1860. Mr. Samuel Fisher, sen., a very able and persevering man, tried very hard to establish mosaic works, and used mind, money, and time in an enthusiastic way. Where is his Atelier? What is his experience? Mr. Jesse Rust, Messrs. Minton, Messrs. Maw, Messrs. Powell—what do they say of the South Kensington School, and the result of the examples they obtained? The late Dr. Salviati, and his commercial efforts in this direction? Are these schools prospering to the extent that it was supposed that they would? I should doubt it.

I have seen effective modern Russian mosaic, and some secular work in Paris, but that on the new façade of the cathedral at Florence is, in my opinion, weak in the extreme—an attempt at showy effect, miscalculated and misplaced. My own impression is that mosaic work is alive to a certain extent as an art in Russia, because it is the result of a tradition nearly unbroken, and is in tone with their architecture and rites, as it was with the Christian Greek.* The condition of the great Western Basilicas also suited Mosaic, and it added grandeur to their grandeur. It obtained distance and a clear view, without twisting one's neck.

Laying aside for the moment the modern methods of making mosaics in most workshops, where they are manipulated upside down, and all the other minutiae of manufacture, let us look at the matter from an æsthetic point of view. Mosaic is not the art for churches with elaborated details and modern rites, with figured musical orchestral accompaniment. It revels not in minutely detailed beauty or the delineation of delicate sentiment, but as an accompaniment of a simple, sublime whole. A chorus of deep, strong voices in simple tones; the Holy Sacrifice mystically hidden behind the Iconostasis; an architectural surface almost undisturbed by complicated mouldings; the walls glittering with the facets of the mosaic cubes, forming figures of immense size, of grand and ascetic aspect, monotonous and solemn, as the architecture and rite—that appears to me to be the home of mosaic. Is that state of art and ritual possible or probable here *in futuro*?

Concerning the second and third points, I have often asserted, and still maintain, that a sound wall will hold a painting as firmly as a mosaic. If it is damp—no matter what cement is used—the mosaic will fall from it either in detail or like a marble slab, and I have seen the mosaics of the sixteenth century in the same edifice as oil-paintings of the same date, in a far worse condition. Then why have recourse to a secondary art—a copy—unfitted for your building, when you can have the artist's own delineation as permanently fixed? As to an artist himself executing his own cartoons in mosaic, experience will tell you how far that can or will be done.

Fresco, like Mosaic, has had much enterprise, talent, time, and money bestowed on its revival, or rather culture (for I do not think we had at any time a School of real Fresco here); but my own impression is that there is not sufficient patronage here to found a small school, even if its durability is proved. The amount of monumental painting done in England is

* The reproductions of ancient Greek Christian Art and Architecture, now in course of publication by the British School of Athens from the drawings of Messrs. R. W.

Schultz and Barnsley, contain a number of drawings of churches with their mosaics and frescoes which partially illustrate my observation.—N. H. J. W.

small—very small, when we compare our population and our wealth with those of other countries; and I think the failures that have taken place so publicly have damped the patronage of this branch of art. Moreover, there is little doubt in my mind, notwithstanding the beauty of Fresco, that it is less fitting and less durable in this climate than many other forms of mural painting. For my part, I prefer the methods that have supplanted Fresco.

Historically, there are really good reasons why Fresco and Tempera in Italy entirely supplanted Mosaic, and why they in time were supplanted by other media. Many resins and oils form durable media when used with such inexpensive vehicles as petroleum, benzoline, or paraffin, all of which escape the blackening effects of turpentine.

In conclusion, let me say I am no pessimist. Nothing would delight me more than to see some good new Mosaic or Fresco, or a School of new Mosaicists and Fresco-painters; but an art or style once absolutely dead takes a lot of reviving. I think, therefore, that if mural painting continues it will be in modern media.

N. H. J. WESTLAKE.

DISCUSSION OF THE FOREGOING PAPERS.

Mr. J. D. CRACE [*I.I.A.*] proposed a vote of thanks to the authors of the Papers for bringing before the Meeting a subject of such architectural importance as mosaic decoration. That subject was large enough in itself to occupy more than one Meeting, and it was not unnatural that the subject of fresco had been dropped a little into the background. Before alluding to the different points in the Papers, he would mention two other forms of mosaic, both of some antiquity—one of great antiquity—which had not been alluded to in the Papers read, but of one of which he thought he saw an illustration on the wall. The two octagonal tiled subjects he imagined to be representations of a form of mosaic which existed in the Museum at Naples, and was found, he thought, either at Pompeii or Herculaneum. There were very few examples of it in existence; but they were curious as being beautifully worked instances of mosaic of some vitreous substance very closely fitted. The other example was of a system of tile mosaic which was Moorish, the ornamental design of which was entirely carried out in glazed tiles cut into the shapes shown, of the different colours. The tiles were about an inch thick, and were embedded in plaster cement. These forms of mosaic were both variations from either of those mentioned by the readers. Returning, however, to what had been mainly the subject of the Papers read—mosaic decoration as ordinarily understood, such as they saw at Ravenna and Venice—he was delighted to hear Mr. Powell's practical exposition, not only of the work, but of the methods of working, which showed that Mr. Powell was artist enough himself to have a very great appreciation of the methods which really contributed to the ultimate artistic effect. One of those was the setting of the tesserae themselves, that they should not be set on too absolute a plane. Another most important point, which had been, however, disregarded by almost everybody who had carried out mosaics on a small scale in

England, was that where figures were worked on a gold ground the gold tesserae should be repeated in the garments and accessories, otherwise the figures would unfailingly be silhouetted as a dark mass against a glaring background of gold whenever the light fell at a reflecting angle. That, he was glad to notice, was a point that had been carefully considered in the decoration now being carried out at St. Paul's. Another point with reference to gold-ground mosaics he thought had not been sufficiently dwelt upon, and that was that their value was considerably diminished directly they were placed on a flat surface. A gold-ground mosaic was only at its full value when on a curved surface or on a surface which at some point or other merged into a curve. At St. Mark's, Venice, which was perhaps the most familiar example, there was no portion of the field covered with mosaics but what was let gradually into some curved formation—either at the angles which were rounded off, or at the spring of the roof where it formed a wagon-headed semi-circular vault. In a large flat surface with gold-ground mosaic, it ran the risk of looking very dark in some lights and in others very glaring; although that, of course, was greatly modified by the proper setting of the mosaics with an irregular surface. The decorations going on at St. Paul's were, perhaps, the most important work of the kind they were likely to see in this country, and any one might well be proud of having taken some share in them. They were being most carefully thought out and most thoroughly studied, both by the artist and by Mr. Powell, whom he could only speak of also as an artist in the matter, as would be evident to anybody who examined that work; and if he might offer criticisms at all, it should be understood that they were offered with considerable diffidence and in the most friendly spirit. He could not help thinking that there was a tendency in what was being done at St. Paul's to obliterate some of the features of the architecture, which he did not think should be so much merged

in the decoration. Between the mosaic surfaces and the architectural features, such as the rib structures which crossed the vault, and features of that kind, there seemed to be a want of outline and definition. Another point which he thought would be evident to the artists themselves, when the scaffolding was sufficiently clear for the work to be seen at its full distance, was that the draperies, the garments of the figures, were over-broken up—were not, in fact, simple enough. It was evident, however, that the most careful study had been brought to bear upon the work, and every one would watch its progress with the greatest interest. In common with every great work there might be much to criticise, but every one would recognise the unusual difficulties which must attend the carrying out of such a work on so exceptional a scale.

PROFESSOR ROBERTS-AUSTEN said that with regard to the little church which Mr. Townsend had built at Chilworth, it seemed to him that the chemistry process adopted in the fresco decoration was as nearly as might be perfect. Mr. Townsend had fully described that method. He mentioned that the biting of the ground which was to receive the colours was effected by hydrofluoric acid; that was according to the original description given by Mr. Rivington. Probably, however, it would be found desirable to effect that biting, not by the acid named, but by oxalic acid, which, although weak, was sufficiently strong to decompose the marble base, and at the same time to form oxalic lime, which would bind all together and add to the coherence of the mass; and then there seemed to be no difficulty in applying the colours, which were mostly metallic oxides, and fixing them with silicate of potash. The effect of the work, so far as he was able to judge, seemed to be exceedingly beautiful, and, he was confident, would prove very durable. It seemed not a little remarkable that although the first description of that method was given to the Society of Arts in February 1884—just ten years ago—Mr. Townsend's work at Chilworth was, he believed, the first which had been executed by that most interesting and remarkable method. In conclusion, the Professor stated he should be glad to give to architects interested in the process any aid that he could in carrying out such work.

MR. J. M. BRYDON [*F.*] seconded the vote of thanks, but felt that the subject was too large a one for discussion on one evening. The Papers had treated more of mosaics than of frescoes; but he hoped that on another occasion the latter subject might be more fully dealt with and discussed. They were, he thought, especially indebted, in the first instance, to Mr. Townsend for the able manner in which he had dealt with the principles which should guide the work, and it was gratifying to find that simplicity, dignity, and quietness were as the essence of the whole

work. He ventured to think that they were the essence not only of mosaic work, but that they should be the guiding principle of all their work. They were running into over-ornament, and it was gratifying to find that this was a process which enforced simplicity, dignity, and quiet. It had been most instructive to listen to the practical exposition given by Mr. Powell of the process of getting the work done and put *in situ*; and he was glad to find a reversion to the old process of sticking the tesserae in their place on the spot, and not on pieces of paper upside-down in the studio. All great work of that kind, he felt certain, should be done on the spot, which was the only way to get what they hoped would be the real effect when the work was finished. They could not possibly get that effect when standing in the studio with the work upside down, or even right side up. For work to be done at the height necessary at St. Paul's, the real old way must be adopted which Mr. Powell had described, and that was to put the tesserae in the place they were to occupy, which was the plan Mr. Richmond was now adopting. The work at St. Paul's was certainly one of the greatest experiments of mosaic work that had been done in England for many years, and every one who loved the Cathedral, and had any care for his art, would hope the work would be a success. If he might venture on criticism, it would be as to the style of the mosaics themselves. So far as could be gathered, the style was scarcely the style of the church; it seemed to him some centuries earlier than the work it was to adorn. Whether that was a right principle to act upon the success of the effort would probably determine; but at the first blush, looking at it from an architect's point of view, it seemed that in a seventeenth-century church the early work of Ravenna was scarcely the style to choose. That was, however, merely an architect's criticism, and did not apply to the work as such; for that the result would be the best test. It was indeed a most interesting experiment, and it would be interesting to see its real effect in such a church as St. Paul's. It was to be hoped the architectural lines would not be destroyed, as had been hinted at by Mr. Crace. When he heard of the chipping away, and so on, he had to confess he felt it was enough to make Wren turn in his grave; but still, the end might justify the means, and they all hoped it would do so.

MR. R. PHENÉ SPIERS [*F.*] said it might interest some present to learn that thirty years ago, and perhaps more (long before he undertook the designs for the work), the late Mr. Burges was of opinion that the proper way to decorate St. Paul's was to strip off all the mouldings inside and cover the whole surface with gold mosaic. That was no doubt in one sense the proper treatment by which to get a properly decorative effect, and the remarks of Mr. Crace emphasised that. He

pointed out why a mosaic always looked better when it ended in a curve of some kind; and any one who had seen St. Mark's or any Byzantine church would observe that the mosaic work was produced on that principle; it was always merging from the plane into the curved surface. Of course, subsequently, when Mr. Burges was called upon to make designs for the decoration of St. Paul's, he limited his scheme, and attempted to decorate portions with the mosaics up above, and proposed to do what was worse than Mr. Richmond was doing—namely, to cut off three inches all over the place in order to cover it with marble. When that was announced, it was treated as such a terrible thing to do that the idea was at once given up; but he (Mr. Spiers) knew that Mr. Burges thought over the subject very seriously for many months, and that he had the greatest difficulty in knowing how to bring a forcible style of decoration and colour which would harmonise and not interfere with Wren's lines. It was very fortunate, he thought, that Mr. Burges's design was not carried out, because one could not but be impressed with the immense beauty of the coloured stone there now; and, so far as the walls were concerned, it was infinitely finer than any marble decoration that could be put on. Mr. Spiers then referred to the interest taken in mosaic work by the late Sir Digby Wyatt, who had to a certain extent introduced such work for pavements, and had more than once lectured before the Institute on the subject, and striven to the utmost to introduce revival of mosaic work.

Mr. A. T. BOLTON [A.] remarked that Sir Digby Wyatt's article on mosaics in the *Architectural Dictionary* formed an admirable summary of the subject before them, as he had acknowledged elsewhere. The difference between St. Paul's and St. Mark's was that the latter had practically no architectural lines at all; it was a great brick carcass plastered inside with mosaic. In St. Paul's, on the other hand, all the lines were strongly defined—by archivolt, entablatures, pilasters, and other means of emphasis; whereas in St. Mark's the only forms employed were borders of decorative design worked in the mosaic itself at the angles. Consequently it was very likely that, if the lines in St. Paul's were not decorated to some extent, the mosaics would have the effect merely of a series of pictures in panels. That, he thought, was really the effect of the pendentives already executed in the dome, which were very like paintings in fresco; and what Mr. Richmond had evidently aimed at was to give the effect of a mosaic interior to St. Paul's by more or less disguising its lines. Thus, in the apse the dividing bands were gilded and then patterned over in red, so that at a distance they would be lost in the general surface of the gold mosaic background; but inasmuch as gilded stone-work, as might be seen by that already gilded

in St. Paul's, turned a peculiar tone after a time, getting much darker (which mosaic cubes would not do), it was very likely that, after all, Wren's architectural lines would assert themselves. Another point of general modern practice was that the gold ground in mosaics was executed with larger cubes than the rest of the work, probably because gold was more expensive, and there was thus less waste in chippings; it had the defect, however, of emphasising the background in a not very pleasing manner. With regard to cartoons, they had been told the interesting fact that Mr. Richmond began to do his with pastels, and afterwards in water-colours. When at Venice, he had seen some mosaics being copied from cartoons in oils, composed in large surfaces of colour, and in which practically there were no lines shown at all; whereas he had seen artists at Palermo copying old mosaics by painting the figures in strong lines, which gave their character, and proved how much the treatment of the old work was in line. Some of the cartoons exhibited were painted all over with joint lines; but as mosaic was composition in cubes, it would, he thought, be better to paint them, and not the joints, and he instanced a drawing so executed.

THE PRESIDENT expressed his appreciation of the Papers which had been read, and the gratification he had experienced in hearing experts repeatedly emphasise the importance of simplicity in mosaics, in respect both of colour and of treatment. In regard to simple treatment of drapery, to which Mr. Grace particularly referred, they had an object lesson before them in one of the cartoons exhibited. The figure of Ahab in the example referred to was dignified from the simple form of the drapery enfolding it; the figure of Elijah, if he might venture on the criticism, compared, to his mind, less favourably in that respect. A vote of thanks had been moved and seconded to the authors of the Papers read that evening, and he thought it would be in consonance with the wish of the Meeting if they coupled with it a vote of thanks to those who had been kind enough to lend the illustrations which were hung on the walls.

Mr. JAMES C. POWELL, in responding, said that with regard to the mosaics at St. Paul's, in the absence of Mr. Richmond he would not take upon himself to answer the criticisms made upon the work; but the Dean of St. Paul's had that afternoon consented to a proposal to invite the members of the Institute to the Cathedral on Saturday the 24th of February, between the hours of 2 and 3.30 p.m., that they might have a private view of the work, and judge for themselves from what had already been accomplished.

THE PRESIDENT said the announcement made by Mr. Powell was one of very great interest, and he should certainly make a point of responding to the Dean's invitation, and no doubt many other members would do the same.



CHRONICLE

The Spring Examinations.

A Preliminary Examination of Pupils and others desirous of qualifying for registration as Probationers will be held in London, Bristol, and Manchester on the 20th and 21st inst. An Intermediate Examination of Probationers desirous of qualifying for registration as Students will be held in London on the 20th, 21st, and 22nd inst. An Examination to qualify for candidature as Associate is to take place in London and at some of the Allied Centres during the week commencing 5th prox. The number of fresh applications for the Preliminary is 77, and there are also 13 relegated applicants; while the Probationers to be examined number 36. To the Examination qualifying for candidature as Associate, admission is asked for by 101 applicants, 42 of whom were relegated to their studies at previous examinations.

The London Streets and Buildings Bill.

The President, pursuant to notice, asked leave of the General Meeting last Monday to petition the House of Commons against a Bill which the London County Council are promoting for the purpose of consolidating and amending the enactments which relate to buildings in London. The Bill, said the President, contained certain matters of which they could not as architects approve. He asked the members to clearly understand that it did not follow that the course proposed by the Council of the Institute involved an inimical position on their part to the London County Council. On the contrary, they were at that moment doing what they could to assist the London Council in carrying through Parliament a really good and beneficial measure. A conference had been arranged, between representatives of the Council of the Institute and of the London Council, in the course of the current week, and the President trusted that the meeting would remove, at all events in point of detail, many of those matters to which architects took exception. There were, however, certain principles involved in the Bill, to which it was not necessary then to refer, that they could not possibly accept; and it was necessary, if they desired to take action at all, to lodge a petition against the proposed measure by a certain date.

This was done, as may be seen on reference to the Minutes [p. 277]; and a proposal made by Mr. Tavenor Perry [A.], which was supported by Mr. Wm. Woodward [A.], to hold a General Meeting of the Institute for the purpose of considering the Bill was received with favour, a resolution to that effect being unanimously passed. In the course of the short discussion that took place on this matter, Mr. A. Crow [F.], Mr. C. Fowler [F.], Mr. Hansard [F.], Professor Kerr [F.], Mr. Alex. Payne [F.], and Mr. R. Williams [A.] also spoke.

The Royal Gold Medal 1894.

The nominee of the Council in the matter of the Royal Gold Medal for the current year is Sir Frederic Leighton, Bart., P.R.A. [H.A.], and last Monday the President announced to the General Meeting that the Council proposed to submit his name to Her Majesty the Queen as a fit recipient of that honour. The day of election is Monday 12th prox.; and any twelve Fellows, desiring to substitute any other name, should deliver in writing to the Secretary of the Institute the name they propose to substitute prior to the 26th inst. The President in making the announcement, after the By-law [64] had been read, said:—It is my duty to announce that at a fully attended meeting the Council resolved to propose as a fit recipient of the Royal Gold Medal of 1894 the name of one who is the typical representative of the Fine Arts in this country, one who is not only a distinguished painter, an eminent sculptor, a fluent linguist, and a finished orator, but who, by his literary productions, and more particularly his Royal Academy addresses in recent years, has evinced an intellectual grasp and a familiar knowledge of our art which have influenced, and cannot fail to influence, materially, the promotion of architecture. I have, therefore, on behalf of the Council, the greatest possible pleasure in proposing to submit to Her Majesty the name of the President of the Royal Academy of Arts, Sir Frederic Leighton.

It may be interesting to note that of the forty-six Royal Medals awarded since the foundation of the Queen's gift in 1847, twenty-nine have been presented to subjects of Her Majesty: twenty for their executed works as architects, and nine for their works as men of science or men of letters. The remaining seventeen recipients consist of eight Frenchmen, four Germans, three Austrians, one Italian, and one Citizen of the United States. Of the forty-six Royal Gold Medallists only thirteen survive.

Visit to the Works of Decoration at St. Paul's.

An announcement was made, last Monday, by Mr. Powell, that the Dean had given his consent to a proposal to invite members of the Institute to visit St. Paul's Cathedral on Saturday 24th inst., between 2 and 3.30 p.m., for the purpose of inspecting the new mosaics executed by Messrs. Jas. Powell & Sons, of Whitefriars, from the

designs and under the direction of Mr. W. B. Richmond, A.R.A. The President has signified his intention to be present, and cards of invitation, restricted to members of the Royal Institute of British Architects, are to be sent by Messrs. Powell & Sons to the Secretary of the Institute, to whom application should be made by letter.

Illustrations to the Papers on Mosaic and Fresco.

Mr. Harrison Townsend [F.] sent sections, elevations, and a plan of the small mission church now being painted in fresco by the process he described, and also a sketch model of a mosaic treatment to a London church; Mr. James C. Powell sent specimens of mosaic, drawings of various works, and two interesting photographs, among others, of a mosaic "picture," by Mr. Holman Hunt, one being a photograph of the artist's design, the other a photograph of the executed mosaic; and Mr. Salviati sent photographs of works executed by his late father and himself in various parts of Europe. The South Kensington Museum, by the kind intermediary of Mr. C. Purdon Clarke, C.I.E. [F.], lent the following for exhibition:—

Paper Casts.—Roman wall mosaic in Santa Maria in Trastevere, Rome. 2nd century A.D.

The Adoration of the Magi. From an original fragment now in the sacristy of Santa Maria in Cosmedin, Rome. 8th century.

Coloured Drawings.—Copy of the mosaic on the vault of Santa Costanza, Rome. The culture of the Vine. Early 4th century A.D.

Mosaic in Santa Costanza, Rome. Early 4th century A.D.

Mosaic in Santa Costanza, Rome. Early 4th century A.D.

The Good Shepherd. In SS. Nazaro e Celso, Ravenna. 5th century A.D.

Mosaic in the triumphal arch of Santa Maria Maggiore, Rome. 5th century A.D.

Four female saints. In S. Apollinare Nuovo, Ravenna. 6th century A.D.

Four male saints. In S. Apollinare Nuovo, Ravenna. 6th century A.D.

Copy of mosaic in the apse of SS. Cosmo e Damiano, Rome. 526–530 A.D.

Mosaic in the vault of the apse of Santa Francesca Romana (formerly known as Santa Maria Antiqua), Rome. 10th century A.D.

The Virgin. From the mosaic in the Archbishop's Palace, Ravenna. 12th century A.D.

Mosaic Pavement in Santa Maria in Trastevere, Rome. About 1280.

The Coronation of the Virgin with saints below. Copy of the mosaic in the apse of Santa Maria Maggiore, Rome. By Jacopo da Turita. About 1300.

Copy of mosaic picture in apse of Santa Pudenziana, Rome. Modern.

Mr. Clayton contributed specimens of Burmese Mosaic, a Panel at Oxford, design for marble mosaic at Chester, and for glass mosaic at the Guards' Chapel in London; Mr. J. D. Crace [H.A.], sketches by himself of mosaic decoration at Constantinople, Ravenna, Rome, and Venice; Mr. Walter Crane, two designs for mosaic decoration; Mr. A. H. Hart [A.], some studies in Italy; Mr. Aldam Heaton, a drawing of mosaic at Pisa, and

five cartoons for ceiling decoration; Mr. T. R. Spence, specimens, a model, and designs for various works; Mr. H. Walter Lonsdale, photographs of glass mosaic, and the sketch design for some wall paintings lately finished, but in oil, not fresco; and Mr. A. T. Bolton [A.], the Soane Medallist of last year, some studies of ancient examples of mosaic in Italy and England. The Venice and Murano Glass Company also contributed.

A Teaching University for London.

The Royal Commission appointed some two years since by the late Government to consider and report upon the subject of a Teaching University for London have issued a summary of the various recommendations contained in the first part of their report, which relates to the constitution and conduct of the University. This summary the Commissioners desire to be understood not as in any way controlling or placing an interpretation upon the detailed paragraphs of the report, but only as calling attention to the main conclusions. The recommendations of the Commission, which, as becomes a scheme dealing with so vast a population and such varied interests, are large and comprehensive, were published at length in *The Times* of the 6th inst., and it will be sufficient here to mention the principal provisions. The Queen is to be Visitor; there is to be a Chancellor elected for life by the Convocation of the University; and there are to be three bodies—viz. the Senate, consisting of the Chancellor and sixty-five members; the Academic Council, composed of the Vice-Chancellor and fifteen members; and Convocation—who are to distribute among themselves the powers of the University. The Senate, which is to be the supreme governing body, with power to frame statutes and ordinances, which shall be alterable only by the Queen in Council or by the Senate itself, is to be composed of representatives of educational bodies in London and of other sources of authority—to wit, the Crown, various Secretaries of State, Convocation and the different Faculties, the Colleges of Physicians and Surgeons and similar bodies, the Inns of Court and the Incorporated Law Society, the Royal Society, the Royal Institute of British Architects, the Royal Agricultural Society, the Institutions of Civil and Mechanical Engineers, the Trustees of the British Museum, and others; the Corporation of London, the Mercers' Company, and the London County Council—in all, sixty-five members. In addition to the legislative functions of the Senate, among its more important duties will be to confer degrees and appoint professors and readers, upon the report of the Boards appointed for the purpose of selection; and to decide such questions as the admission of new "Schools of the University." The Academic Council are to have jurisdiction over the educational, as distinct from the constitutional, work of the University. They will exer-

cise control over the schools of the University and Boards of Studies, determine curricula of study and examination, and settle courses of study to be pursued at any school of the University, after consultation with the authorities of the institution concerned.

Free Lectures on Building, &c.

Under the auspices of the Worshipful Company of Carpenters, a course of free lectures on matters connected with Building will shortly be delivered in the Hall of the Company. The first lecture, at which Lord Claud Hamilton is to preside, will be given by Professor Unwin, F.R.S. [H.A.], on the 21st inst., the subject being "Niagara, and the Works for its Utilisation." On the 28th inst., Sir Douglas Galton presiding, Professor Corfield [H.A.] will lecture on "House Sanitation." On the 7th March Mr. T. E. Colcutt [F.] is the lecturer, and his subject "The Imperial Institute," Sir Joseph Fayer presiding. Professor Banister Fletcher [F.] lectures, 14th March, on "The Englishman's Home," Sir John Lubbock presiding; Professor Silvanus Thompson, D.Sc., F.R.S., 21st March, on "The Production of Electric Motive Power," the Master of the Company presiding; and Professor Roger Smith [F.], the 28th March, on "Modern Institutions, Asylums, and Hospitals," Sir James C. Lawrence in the Chair.

Additions to the Library.

Apart from the contributions of cognate Societies there have been comparatively few additions to the Library since the last issue of the Journal. The publishers (Messrs. Crosby Lockwood & Son) have again made their annual donation of *Lockwood's Builders' and Contractors' Price-Book* for 1894, which contains the usual valuable information in a handy form, besides some additions with respect to electrical lighting appliances, made in anticipation of the increased interest in this form of illumination which the expiry of numerous patents is likely to create. In the appendix may be found the principal provisions of Acts of Parliament relating to building and sanitary matters; the various rules and regulations issued by the London County Council, the Corporation of the City of London, and other public bodies; and the Heads of Conditions of Contract drawn up by the Institute and the London Builders' Society. Mr. Henry C. Jones and Mr. George Wallace have presented an Abstract (which they have compiled in pamphlet form) of the Clauses of the London Streets and Buildings Bill, with an index to the principal provisions, &c. The Glasgow Architectural Association has contributed the fourth volume of its *Sketch-Book*, which contains numerous measured and other drawings of places of architectural importance, including plans, elevations,

sections, and details of the Crypt or Lower Church of Glasgow Cathedral, from the pencils of various artists, and the south transept of Dryburgh Abbey, measured and drawn by Mr. Andrew Muirhead. Mr. Wm. Fraser provides an illustration of the old pavement in Fountains Abbey, which is supposed to be the remains of the *Pictum Pavimentum* bestowed on the church by the abbot, John M. Cancia, between 1220 and 1247; and the artistic value of the collection is enhanced by two drawings of Mr. Andrew N. Prentice [A.], done respectively at Florence and Bologna. The *Transactions of the Essex Archaeological Society* (Part iv., Vol. IV.) contain illustrations and notes of Hedingham Castle and Church, and of a sculptured pillar of stone, presumed to be the stem of the village or churchyard cross, by Mr. C. F. Hayward [F.], and a Paper on St. Michael's Church, Braintree, by the vicar, the Rev. J. W. Kenworthy. Chapters I. and II. of *Etude sur la sculpture Brabançonne au moyen âge* form the principal contribution to the *Annales de la Société d'Archéologie de Bruxelles* (Vol. VIII., Part i.); and in No. 1, Vol. III. of *Arte Italiana decorativa e industriale* the first of a series of articles under the title of *L'insegnamento artistico-industriale in Europa* deals with Italian work in the South Kensington Museum. Mr. Oswald Fleuss contributes three designs to the first instalment of *Church Embroidery*, published by Messrs. R. Sutton & Co., London.

REVIEWS OF NEW BOOKS. VII.

(19.)

ANURÁDHAPURA, CEYLON.

Archæological Survey of Ceylon. Anurádhapura: Fifth Progress Report, April to June 1891. By H. C. P. Bell, C.C.S., Archæological Commissioner. Colombo, 1893.

This *Report* by Mr. Bell of his explorations at Anurádhapura is rather a short one; but the amount of work done is not to be estimated by the length of his account of it. In a number of instances where remains have been brought to light, the explorer defers his description of them till they have been more thoroughly examined, and he can write with more certainty as to their real character. This is a good sign, as it shows he does not jump to his conclusions too rapidly. The extent of the explorations may be inferred in this *Report* from the plates, of which there are over thirty, many of them of much interest from the details they give of the architecture and construction at Anurádhapura. The Government have largely increased the number of coolies, and with this increased force Mr. Bell is now able to make greater progress with his work.

The short detailed summary of the work done might be given here, but it would be all but meaningless without a plan of Anurádhapura,

which the *Report* very much wants. As a large part of the explorations has been that of clearing out the jungle and tracing some of the main streets of the ancient city, it is to be hoped that the next *Report* will supply this want.

The greater part of the *Report*, as well as the plates, are devoted to the exploration of the Vijayārāma Monastery. The old road to it had to be cleared out through the jungle, and it is a mile and a half to the north of the Jētawanarama Dīgaba, the most northern of all the Dīgabas at Anurādhapura. There is much to be done yet at this monastery before it can be all thoroughly understood, but already enough has been made clear to excite a sufficient interest in the remains. The Dīgaba in the central enclosure seems to have been well explored, and Mr. Bell's restoration of it has every appearance of accuracy. He found nothing in the relic cell, as it had been opened before, but luckily the spoilers left some small copper-plates, thinking them of no value; but they supply a date for the Dīgaba—about the middle of the tenth century A.D.—and thus, as Mr. Bell observes, we have a chronological starting-point now for “a comparative study of “styles and forms of the sacred architecture of “Anurādhapura.” In the Vihāra No. 1, within the enclosure, Mr. Bell supposes there were four *āsana*, or thrones, on which he is inclined to suppose stood “the four Manushi Buddhas who “preceded Gautama in the present *Kalpa*.” This would be a different arrangement from what is found in Burmah; there they count three Buddhas before Gautama, the latter making the fourth; and in the temples the four are placed each in one of the cardinal points.*

Mr. Bell thus describes the Vijayārāma remains:—“Broadly, the monastery may be said “to have consisted of a raised oblong site, 288 “feet north and south by 268 feet east and west, “walled, with entrances at the cardinal points, “enclosing a dīgaba and three viharas, and an “open hall attached on the north. Surrounding “this enclosure was first a procession path [*vidiya*], “then twelve annexes evenly grouped, with the “chief *pansala*, a bath-house, and a few other “buildings on the south and west—the whole

* “Compare Cunningham's *Topes of Bhilsa*, p. 191. It “there appears that at No. 1 Tope at Sanchi, within the “enclosure and immediately facing each entrance, there is “a large figure, once under a canopy. That to the east “Major Cunningham considers to be ‘Krakuchanda, first “‘mortal Buddha; that to the south, Kanaka; to the west, “‘Kasyapa; and to the north, Sakya Sinha’ [Gautama]. “Hence it would appear that the figures in the Ananda “were not placed arbitrarily, but according to orthodox “Buddhist tradition.” Yule's *Mission to the Court at Ava*, p. 39, note. “The Ananda” mentioned in Yule's note is one of the old temples at Pagan, in Burma, where he found the four Buddhas facing the cardinal points; and the object of the note is to show that this was the same arrangement that Cunningham found at Sanchi. In each case Gautama is the fourth Buddha.—W. S.

“covering an area of twelve and a half square “acres—bounded by a quadrangular *prākāraya*, or “outer wall, of stone, 600 ft. by 900 ft., traces of “which may be seen chiefly on the east.”* This procession path round the whole of the central enclosure would indicate that it was all considered to be very sacred. It is a large space for a *pradakshina*, and I can recall at the moment no temple or shrine, either Buddhist or Brahminical, in India with a procession path of such a size. We have to go still further south, to Stupas such as that of Boro Buddor in Java—where the path would be still longer—to find anything like the one at Anurādhapura.

The plan of the Vijayārāma Monastery suggests an origin in Indian temples,—which, so far as I can recollect, has not yet been given by any one. The temples of Northern India present a strong contrast with those in the south, from the great difference in the space of ground they cover. In the north temples occupy little space, often there is not even a wall round them; while in the south they are many of them of vast extent, with a number of rectangular enclosures, such as those represented in the plan of Vijayārāma. Fergusson, when he wrote his first *Handbook of Architecture*, published in 1855, compared them with Egyptian temples, but thought that the resemblance was greater to the old temple at Jerusalem, with its *Haram* enclosure, the *Stoa Basilica* of Herod's temple bearing a strong resemblance to the *Choultry* of the Madras temples, with its 1,000 pillars. In the plan of the old Singhalese monastery, with its enclosing walls, we have the same arrangement as in the southern temples of India, and that too almost on the spot; we have only to suppose that the Buddhist establishments in the south part of the peninsula were similar to those we now find at Anurādhapura; and that on the downfall of Buddhism the Brahmins took possession of them. The result would be that the dagaba and other halls or shrines would be converted, or replaced by temples of Siva or Vishnu—or other deities of the Hindu Pantheon. This is what has often occurred in the history of religions. The triumphant faith succeeds to the temples of the vanquished, and merely changes them to suit its own requirements. As a case in point, it is now supposed that the temple of Jagannatha at Puri † was originally a Buddhist establishment. In this case, if the type for the southern temples can be found in India, it becomes unnecessary to go to Egypt or Jerusalem for it. I gave this theory merely as a suggestion, which must fall or stand as further evidence may turn up. In a former notice of the Ceylon explorations I made some other suggestions of origin—which came into my mind from reading the *Reports*; if any of these should turn out to be correct, it will show the value

* P. 5.

† “Juggernaut.”

of the work done, not merely as it advances our knowledge of the archaeology of Ceylon, but also from its throwing new light on the archaeology of India.

WILLIAM SIMPSON.

(20.)

THE POORER DWELLINGS.

The Dwellings of the Poor and Weekly Wage-earners in and around Towns. By T. Locke Worthington, A.R.I.B.A., with an Introduction by G. V. Poore, M.D., F.R.C.P. Small 8o. Lond. 1893. Price 2s. 6d. [Messrs. Swan Sonnenschein & Co., 6 White Hart Street, E.C.]

To review a work on the dwellings of the poorer classes by so industrious an inquirer as Mr. Locke Worthington is invidious. It is more to the purpose to simply recommend all who are interested in the subject to obtain the book, and make themselves acquainted with the facts and propositions contained in it. Of all human failings that of poverty is perhaps the greatest—at any rate, it is the one that is most heavily punished—and the habitations of such do not afford a very cheerful subject for consideration; not, at least, to those who have tried to do their best towards alleviating the lot of this less fortunate portion of humanity. In the history of civilisation it would appear that the improvement of the condition and the increasing luxury of the upper classes are somehow balanced by a corresponding depression in the circumstances and conditions of the poor. It is to the improvement of their condition, whether by Act of Parliament or otherwise, that we must hope to counteract the tendency of the extremely poor to develop into Socialism and blind hatred of those whose position in life is as enviable as theirs is the reverse. Mr. Worthington treats the subject as if it were one altogether amenable to legislation, and that ultimately perfection might be attained by that means. We admit that many improvements have been made, and must continue to be made, compulsorily, but think that, while it may have been an easy task to settle Trinity High Water by Act of Parliament, it is impossible, except by patient, gradual, and well-directed efforts, to change natures which are vitiated by birth and evil surroundings. Their improvement is almost of as much importance to all other classes as to themselves, and where all are so interested in the attainment of an end it is difficult to explain the slowness of progress; but the real battle is against ignorance, uncleanness, and vice, all of which are principal factors in regard to poverty, disease, and misery. Mr. Worthington is especially to be commended on his strong advocacy of decentralisation and the provision of proper air spaces around dwellings; and it is to be hoped that in time the more deleterious of modern developments, often misdirected efforts of philanthropists, may to some extent be undone. In his recommendations as to sanitation we cannot but generally agree with Mr.

Worthington, though they are sometimes of such a kind as to provoke the simile of trying to hammer the obvious into dull intelligences. The little work terminates with no fewer than eighteen conclusions, all suggestive of much thought and earnestness on the part of the author, but we are glad to find that he is sufficiently modest not to consider them infallible. There can be no finality in the matter; there will always be a better state to be attained, and we must be grateful for any little advance.

WILLIAM CHARLES STREET.

(21.)

ELEMENTARY DESIGN.

A Text Book of Elementary Design. Science and Art Series. By Richard G. Hatton. 8o. Lond. 1894. Price 2s. 6d. [Messrs. Chapman & Hall, 11 Henrietta Street, Covent Garden, W.C.]

This is a small handbook of 115 pages, forming one of a new Science and Art Series. It is likely to be of public use, and it will always hold an honourable place in the series. Mr. Hatton imparts what he has to say in the form of instruction to a class, and a great deal that is put before the reader is what an art student requires. The language is terse and crisp, and, better still, to the point. No useless space is taken up by lengthy description, and the book is an admirable example of much information in brief space.

After a few prefatory remarks with respect to the mode of teaching in class, and the wants of the students, the book begins with a chapter on some principles of Decorative Design of decidedly original kind. We may be surprised at the opening statement that "no one has a right to dictate 'principles of art or taste.'" People do, and people will; and the general acceptance of our author's dictum would be to greatly limit the number of art manuals. It is followed, however, by the goodly advice that "Designers must aim 'at producing things that they like to look at;'" and all through the book there are propositions equally sound and valuable. Among these may be mentioned: "Decorative features must be 'developments of structure, not additions to it;'" and, to quote another only: "The decoration 'must follow and confirm the structure.'"

The second chapter divides forms into Dynamic and Static, as they are called by our author, and many cuts are given to illustrate his meaning. How far the division may be a help to the art student may be doubtful, but two of the sketches given, expressive of weight but mobility, and of immobility, are certainly suggestive and of value. This chapter is followed by others on the "Paradox of Decoration;" on the "Construction of 'Details,'" one of the best in the book; and another one on "Filling Spaces," which is a capital counterpart to it. There are chapters on the Distribution of Masses, the Method of Delineation, &c., together with others of much technical

and useful interest on the setting out of repeating borders, endless patterns, and such like, with here and there just a touch of what I have heard called "art jargon," a little of which, however, may be useful to know. Figure 152 is an example of Italian Sgraffito decoration with a decidedly awkward curve. But this, to our author, has a "quality of luscious wealth."

The book is well illustrated with a profusion of sketches, which well bring out the meaning of the letterpress. They are almost all original designs, and not copies of old examples, and they are capital examples of decoration—for the most part. Some of the bordering patterns are very good, and many of the filling-in sketches are not only beautiful but eminently suggestive.

I have said sufficient to show that this little manual is deserving of more than ordinary attention; and when it is remembered that its small price places it within the reach of all art students, it will be matter for surprise and regret if it is not made use of by the class for which it is intended, to a very large extent.—E. P. LOFTUS BROCK.

(22.)

ELEMENTARY EGYPTOLOGY.

Egyptian Art: An Elementary Handbook for the Use of Students, &c. By Charles Ryan. 8vo. Lond. 1894. Price 2s. 6d. [Messrs. Chapman & Hall, 11 Henrietta Street, Covent Garden, W.C.]

This readable little work may prove a useful handbook for beginners in the study of Egyptology, as it gives a fairly good short epitome of the history of Egypt from the remotest times—of course a great deal has been necessarily omitted; but it would be well if the author were to revise some of his minor details.

He has divided the book into eight chapters, the first four being devoted to the history from the earliest times to the close of the reign of Rameses III., the first king of the twentieth dynasty, *circa* B.C. 1200. The ancient Egyptians were not autochthonous, as the author quotes in his first chapter; nor were they negroes, as others have sometimes stated; but they were of the Caucasian race, and came from some part of Asia; at what period it is unknown, but it is supposed from what we do know that they were highly advanced in civilisation when they first settled in the valley of the Nile. There is very little to remark upon in these first sections of the book, as the information given is simply a slight *résumé* of the principal events connected with the subjects treated upon.

Mr. Ryan advocates the formation of museums and art collections in all our great schools; such a course would be most useful and instructive. But he should read some recent works before he issues a second edition of his handbook, which I trust may be called for, in order to correct errors; as, for instance, when speaking of Isis nursing Horus, he informs his readers that the

moon was her sign, but states she had many others; it is a pity he did not select one of the others, as she had no connection with the moon, but she is generally now considered to have been a goddess of the Dawn.

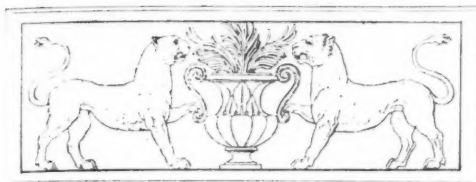
Referring to the Shepherds, or the Hyksos, as they are usually called, he states: "The Israelites retained their language, literature, and religion in a considerable degree while there; though the incident of the golden calf in the desert suggests their familiarity with, and trust in, the worship of Ptah." I must admit I am at a loss to understand what the connection is between the setting-up of the golden calf in the desert and the worship of Ptah, unless it was, as we suppose, that the golden calf was a form of Apis, the sacred bull of Memphis,—whose worship was introduced there as far back as the first or second dynasty,—who was sacred to the god Ptah.

Then he gives an account of the tombs, upon which I have no comments to make. The next chapters are devoted to the Ptolemaic and Later Period. Upon religion, &c., in the latter I take exception to the statement that Osiris was the sun, as all Egyptologists are of opinion that Rā was the sun, and that Osiris was the sun of yesterday, or the dead sun, and as such he was the god of the dead. Upon page 76 there appears to be a misprint, as it was Psamtek III. who was king of Egypt when he was defeated by Kambyzes, and not Psamtek II.

The book concludes with an appendix and a list of the Egyptian dynasties, the latter being a very useful addition, but the former is rather antiquated as to the description of the objects and amulets; as, for instance, when mentioning the Sistrum—which is a musical instrument—the author states that it has upon each side the head of Isis and Nephthys, whereas it is considered to bear the head of Hathor on each side. The mysterious eye of Osiris should be the eye of Horus, or the Utehat; it was supposed to typify good health and happiness under the protection of the sun-god. Scarabs were emblems of Rā, the Sun, and typified the resurrection and the renewal of life after death; they were also emblems of creation.

The Asp was probably the Uroæus, which was a symbol of sovereignty, and was worn in front of the head-dress of the kings and of gods. It was also employed as a determinative or emblem of all the goddesses. The vulture, he states, was a symbol of Isis, whereas it was an emblem of the goddess Mut.

The book is amply illustrated; and, though the illustrations are not original, they are useful to enable the reader to follow the text. I trust it may prove beneficial in encouraging beginners to continue the fascinating study of Egyptology, by going further afield and reading the valuable works now published in many countries upon this science, to which the author of this little work introduces them in an interesting manner.—F. G. HILTON PRICE.



LONDON AND ITS COUNCIL.

By ARTHUR EDMUND STREET, M.A. OXON. [F.]

There is, let us hope, little real difference of opinion at the present day as to what London needs, or even as to the necessity for some individual sacrifice in the promotion of the common good. We may say that many of the elements of health and beauty are wanting, or lament that almost complete absence of unity which is so noticeable; it is little more than the expression in different words of a consciousness of which the subject-matter is identical.

The most grudging of ratepayers will admit that the squalor and ugliness which are almost at his door carry with them physical and moral evils, for the existence of which our humanity is bound to leave no excuse. He may even concede that the richest city in the world, to use the time-honoured phrase, should, architecturally, be less suggestive of a congeries of third-rate towns—that the heart of London should rightly be no mere geographical expression, but should have some of that reality which belongs to the phrase when it is used of Paris or Vienna.

So long as we confine ourselves to general propositions such as these he is wholly sympathetic; it is when we come to details, to questions of ways and means, that the ratepayer begins to look doubtful.

In a problem of this sort an architect is not a wholly irresponsible being. His training and practice must have taught him something of the difficulty with which anything like heroic measures are hedged round. This being so, it was somewhat odd, and, I think, a little to our credit, that so sympathetic and kindly a tolerance should have been extended to Mr. Cawston's presentment of his somewhat over-comprehensive scheme.* Two or three members of the County Council attended on that occasion to get the earliest possible information as to the panacea which was to cure all our ills; but the elixir was firmly, if politely, declined, as being quite beyond the means of poor men; and now we find these same gentlemen asking our opinion as to the merits of a prescription, which they are presently to ask power to dispense, with an object by no means wholly dissimilar—a prescription which, however, contains certain

elements so distasteful to us that, in spite of the character we have to maintain, we can hardly avoid making wry faces in anticipation.

Is it then that our fervour oozes away when we are asked to descend to particulars, from considerations of artistic propriety to those of pounds, shillings, and pence, or are there points in the London Streets and Buildings Bill—in the view which those who have drafted it take as to the irreducible minimum of light and air to be required, and in the measures to secure it—with which fault may legitimately be found? One thing is quite certain, that what we architects ask for is almost precisely what the London County Council as men of business have it in their minds to secure—sound building, systematic laying-out, more open spaces, broader and straighter thoroughfares. The main difference between us is, that while we are comparatively unfettered, the feeling of responsibility is, or ought to be, paramount with them. We look at the whole question, including the expense, in a large way. They feel bound by pecuniary exigencies to a somewhat baldly utilitarian policy, and to a severity in the exaction of penalties from those whose ill fortune rather than their fault may have linked their interests with an offending structure or an insanitary area, which is greatly to be deprecated.

With regard to the maximum of encroachment on the common fund of light and air, so to put it, which is to be allowed in the future, it is impossible to assent to what is proposed unless—and this means putting undue power into some one's hands—the circumstances are to be taken into account in each individual case. To limit the height of a building to the width of the street on which it stands may be generally reasonable, but the indiscriminate application of the principle that the bulk of a building is to be contained within a so-called "diagonal," starting from the back boundary at the pavement level and inclined to it at an angle of 45° towards the front, with a clear space of at least 10 feet deep across the whole width, is to discount the value of a building site quite unwarrantably. Again, one may reasonably complain that a structure of monumental character—not being a public building,—though it may run up to a height equalling the width of the street which it fronts (up to 75 feet at the eaves), and for 40 feet back along the side, is to be restricted from that point on to a height no greater than the width of the side street, however insignificant that may be.

We do not ask that the laws of hygiene should be forgotten for a moment, but we do ask that their application should not be strained. It is probable that over a considerable portion of the area of London we have already reached the limit of perfectibility. Given a vast aggregate of human beings, and that limit cannot be indefinitely extended. Already we are rearing up hundreds of

* "Advantages of adopting a General Scheme in making 'Improvements to London Streets,' *The R.I.B.A. Journal*, Vol. IX. N.S. pp. 159, 168.

thousands of relatively bad lives which under the old conditions would have been wiped out wholesale. This is as it should be, and there is still a very great deal to be done in the same direction, but we can hardly expect to go on lowering the death-rate as we have in the past. Already it shows ominous signs of backing; with every poor life saved we are providing so much food for disease. It is only within the last generation that there has been a veritable city population, hemmed in by mile upon mile of bricks and mortar, and descended from parents and grand-parents brought up under like conditions, and the result of this lowered vitality is seen in the alarming prevalence of such diseases as diphtheria, which, like so much else that we would rather keep out, has been attracted to London from the country. As the population gets more weakly, so will the struggle tend to be more and more in favour of these interloping ailments, and against a lowered death-rate, and because of improved conditions as much as in spite of them.

When we turn to Mr. Beachcroft's very clear explanation* of the policy of the Council, the impression of the stringency of their proposals is unfortunately confirmed, as well as a sense of some injustice in the incidence of the taxation for improvements. This is not the place to discuss the position of the ground-landlord. The progressive party may or may not be right in their contention that he has escaped too lightly in the past. Practically, the tenant has to bear all the onus of increased rates; he cannot assess them with any accuracy beforehand, nor can he arrange a sliding scale so that rent may diminish as rates rise. Whether we recognise this or not we shall at least agree that the prospect of reducing the rating, which is as haphazard as other characteristically English institutions, to some system, and settling once for all the liability of the various persons interested is a most agreeable one. Meantime Mr. Beachcroft proposes to skin the lamb to some purpose. Suppose, he tells us, it is decided to set back the buildings in a certain street for purposes of health and not for purposes of traffic; then that land will not be acquired by the County Council, and there will be no compensation at all. The owner may treat and regard that part of his site which he has to give up as his forecourt, and is entitled to derive what satisfaction he may from the contemplation of it. He will get no other. The new law would not operate till a building was worn out, it is true, and, for the owner threatened with such pains and penalties, that moment, needless to say, would never come. Instead of rebuilding, he would cobble and patch to all eternity; then will a hawk-eyed County Council "exert increased vigilance,"

which may be interpreted as meaning that it would find a reason for pulling the house down. The owner would then retire gracefully to the line of frontage determined on, and might think himself lucky if he were not called on to "pay for any increased value or improvement which may have accrued to the building by reason of the setting-back." But what if the restricted site allows of no building? and this brings us to the point of view of the ratepayer. Obviously, where the setting-back of the houses makes it impossible to rebuild, the Council is forced to buy the sites, and their purchase would involve that of the property adjoining if they were to be made any use of. This opens wide possibilities of expenditure, and makes one the more anxious that no mistake should be made as to the necessary width of streets, which might land us in purposeless extravagance. Unhappily there are whole working-class quarters which admit of no doubt whatever as to their condition, which are crowded with a population tied more or less to the neighbourhood, and standing in the relation of about two to one to the number which buildings erected on the site under existing regulations could be looked to to accommodate.

These sites, unfortunately, are often so entirely devoid of attractiveness that the County Council find it impossible to get any Artisans' Dwelling Company to take them off their hands, and the Council have to undertake the work. Meantime quite half of those who have been dislodged have to be housed in the neighbourhood, at great expense, and with results, not altogether satisfactory: many families are housed and unhoused repeatedly as they wander from one condemned block to another, and, when all is done, most of the original tenants have got dispersed, and the buildings are, as often as not, occupied almost entirely by newcomers.

What is to be the solution? Are the County Council to buy land in the suburbs, build model houses for working-men, incidentally raising the death-rate in the neighbourhood by filling it up, obtain a sufficient service of cheap trains, morning and night, from the railway companies, and then find their houses snatched up by country people? Something like this is a common experience. The fatal attractiveness of London must be dealt with seriously, and houses built for a special class confined to that class. What all this means in salaries of clerks, overseers, and so forth, is not easily calculated, but if there is no other solution we shall have to accept it. We have got to do our labour of Hercules heroically or piecemeal, and, at least in part, heroically.

But, to use a vulgarism, where do the rate-payers come in? They are to do all the paying of the piper; are they never to have the calling of the tune? If the County Council are to act as a great landlord; if they are to be entrusted with the vast

* *Overcrowded London*: a Lecture given in Bermondsey Town Hall, 23rd Nov. 1893, by R. M. Beachcroft, Ald., L.C.C., for the London Reform Union.

discretionary powers contemplated in this new Bill, it must be under sufficient safeguards and restrictions. "Quis custodiet ipsos custodes!" the patient ratepayer may well exclaim. It would have been satisfactory, at least as a guarantee that the County Council recognise the right of the rate-paying public, that something of this should have been recognised in the Bill, some code of rules included to define and crystallise the somewhat vague powers of this Colossus.

What all patriotic Londoners want is to make their city worthy of herself. To compass this end the formulation of a complete scheme of improvement similar to that which is in force in Paris is essential. Something of the sort is said already to exist in the pigeon-holes of the County Council; but, with every confidence in the capacity of their advisers, it is impossible not to feel that such large and vital questions ought not to be the subject of any such hole-and-corner settlement: it is a question on which the leaders of our profession, the natural representatives in such a matter of the ratepayers at large, ought to be heard. We have been told that to make the scheme public would be to make it impossible; that buildings would at once be run up with a view to compensation, and claims for damage mount beyond all possible hope of satisfying them. This is not the experience in Paris, but surely the members of the County Council are over-modest when they profess their inability to lop off the heads of such a Hydra. Let us, at least, put it to the test. We do not want to make London yet another bad imitation of Paris—*bien entendu!* there are too many of them already; but we do want a measure of the orderly, logical, systematic procedure which is the good point in French officialism. It would be better, even, that the liberty of the subject should be interfered with, than that new Regent Street should be another Shaftesbury Avenue.

A. E. STREET.

NOTES, QUERIES, AND REPLIES

THE LONDON COUNCIL'S BILL.

A Handy Abstract.

To be saved the task of plodding through the hundred and ninety odd clauses and innumerable sub-clauses of this Bill, with the tiresome iteration and tautology inevitable in such literature, should be indeed a subject for rejoicing; and busy men will welcome the little work entitled *A Handy Abstract of the Clauses of the London Streets and Buildings Bill*, compiled and issued by two officials of the St. Giles's Board of Works, Mr. H. C. Jones, solicitor and clerk, and Mr. G. Wallace, engineer and surveyor, respectively to the Board. It is, of course, impossible within the limits of a small pamphlet to include all the details of so large a measure; but a short cut, so to speak, is here provided to an intelligent understanding of

the objects aimed at in the legislation proposed, and the reader may gauge with the minimum of trouble some of the possible results if the Bill become law. The subjects treated in each of the fifteen parts and four schedules into which the Bill is divided are here given; and these are followed by a concise epitome of its provisions, taking them clause by clause. Not the least valuable portion of the work is the Table given at the end, comparing the Bill with the existing law, and showing the sections of the Acts proposed to be repealed, and the corresponding clauses in the new measure. The various clauses containing legislation on new lines are also enumerated in the Table, and among these may be mentioned clause 14, which empowers the County Council to require buildings in new streets distant more than two miles from St. Paul's to be set back a specified distance; clause 30, requiring the provision of open space at the rear of new buildings of not less than 150 square feet, such open space to belong exclusively to such building, and to extend laterally throughout the entire width, the distance across the open space not to be less than 10 feet; clause 35, requiring the superintending architect to determine which is the front and which the rear of a new building; clause 49, requiring new buildings exceeding 60 feet in height to be provided on storeys above 60 feet from street level with reasonable means of escape in case of fire, no such buildings to be occupied until the Council have issued a certificate that this regulation has been complied with; clause 99, prohibiting the erection of buildings within 50 feet of premises used for any dangerous business, except where a structure built before 9th August 1844 is burnt down and rebuilt; sub-clause 3, prohibiting the carrying on of any dangerous business in any building or vault, or in the open air, at a distance of less than 40 feet from any other building or vacant ground belonging to any other person than his landlord—match-making, or the manufacture of turpentine, naphtha, varnish, tar, resin, Brunswick black, &c., are considered to be dangerous businesses within the meaning of this clause; clause 100, prohibiting the erection of dwelling-houses within 50 feet of a building used for a noxious business, such as that of a blood and bone boiler; but by clause 101 the provisions of the two previous clauses are not to apply to any public gasworks or premises used for distillery or rectification of spirits under the survey of the Commissioners of Excise; clause 125, empowering the district surveyor to enter and inspect all work during progress or within three months after completion, also to inspect exempted buildings at all reasonable times for the purposes mentioned. As fully half the Bill, however, is devoted to entirely fresh legislation, it would be a task of some magnitude to call attention to all the new clauses. A clean sweep is to be made

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of no fewer than thirteen existing Acts, ranging from the Metropolitan Building Act 1844 to the London Council General Powers Act 1893.

Alderman Beachcroft on Overcrowded London.

From LACY W. RIDGE [F.]—

Mr. Alderman Beachcroft is a member of the London County Council who by his professional experience is necessarily well acquainted with the circumstances connected with the tenure of property in London. This gives importance to a Lecture delivered by him in Bermondsey Town Hall in November last, and now published in pamphlet form by the London Reform Union. It is impossible not to regard the Lecture in connection with the Bill about to be presented to Parliament for the reform of the London Building Laws, a Bill to which the Institute, through its Practice Standing Committee, has devoted, and is still devoting, much attention.

The proceedings of the Metropolitan Board of Works and of the Commissioners of Sewers in the City, dealing with unsanitary areas under the Act of 1875, and the subsequent proceedings of the Council after obtaining further parliamentary powers, are passed in review by the Lecturer, and the financial results tabulated. These are pronounced unsatisfactory, while it is incidentally mentioned that the insistence by the Council upon proper air space for the buildings has delayed rebuilding on cleared sites for seven, eight, or even ten years, and that "after repeated futile auctions the Council has been obliged to undertake the work itself, and the cost per head of persons rehoused has been very nearly doubled." If the regulations of the Council as to the spaces about buildings are those embodied in their Streets and Buildings Bill, it is not to be wondered at that the results above described have been reached.

It is recorded that on the 1st November last the Council, impressed by the gravity of the situation as shown by a scheme for rebuilding in Somers Town at the cost to the ratepayers of £100 a head, postponed further action. The Lecturer then proceeds, by subtle steps, to map out what practically amounts to a scheme for transferring to the private owner the loss of rebuilding the crowded parts of London on more sanitary principles, which the Council will not, or dare not, undertake as the corporate representatives of the public. The process is the enactment of severe building regulations as to streets and open spaces, which are to be applied not only in newly laid out building estates, but whenever houses are rebuilt.

The effect of these proposed regulations on the work of architects and the interests of their clients is a matter of importance to the Institute.

It is suggested that regulations of the sort are in force in provincial towns. In this, as in other things, direct election appears to have given the

county of London a Council unable to rise above mere provincialism, and incapable of recognising that rules endurable enough in the country may be quite inapplicable to a district containing in the City the commercial capital of the world with land of value nowhere else approached, and in the city of Westminster the administrative and legislative capital of the empire with all which it implies. It is manifestly useless, in such a matter as this, to compare London with such places as Brighton, or with its own suburbs of Hornsey or Willesden, which exist almost entirely for residential purposes, and where on open sites the regulations of the Model Bye-laws may be reasonably applied. It is argued that the Public Health Act defines as "new buildings" all buildings pulled down to the ground-floor, and that consequently, in the provincial towns generally, the regulations of the Model Bye-laws as to the spaces about buildings are applied to all new buildings on old sites. Reference, however, to a collection made in 1887 by the Practice Committee of the bye-laws in force shows that in Birmingham, Bristol, Bradford, Leeds, Leicester, Wigan, and Glasgow—and it is with such towns as these only that London can be compared at all—regulations far less severe than the Model Bye-laws are in force, while in every case there is a dispensing power reserved to the local authorities, at whose option the bye-laws are enforced or relaxed.

It is true that the London County Council in their proposed Bill reserve to themselves the right to relax the enactments in special cases; but such a power as that, easily enough exercised in a small community, is liable in a vast area like London to become the cause of great delay, uncertainty, and even oppression. It would be nearly impossible to form any idea of the value of a piece of ground while it remained a matter of uncertainty how far it could be covered with buildings and to what height they might be raised. It is extremely improbable that in any town in the kingdom "new buildings" on old sites are habitually set back behind the line of frontage, so as to give the prescribed width to the road under the Model Bye-laws, without compensation. At any rate, the County Council have thought it necessary to introduce into their proposed Bill a clause (No. 31) which speaks in much more certain terms than the Model Bye-law relied on by Mr. Beachcroft. It seems probable, however, that not even the slow but gradual improvement anticipated would be effected, as owners of property would keep up almost any existing building rather than set their fronts back beyond the line of frontage of the neighbouring buildings, so that they would be recessed between two party walls, to the great detriment of their light and air. For this a useless space of ground in front, even though it be enclosed by a wall seven feet high, is but a sorry compensation. The contemplated

stringent application of the sanitary powers of the local authorities might do something to bring about rebuilding. The whole scheme, however, ignores, and must almost fatally discourage, the real source of nearly all building improvements in London, the desire to make the sites more available by removing old and unsatisfactory buildings, not because they can be kept going no longer, but because they can be reconstructed so as to be more available, and to bring in higher rents. Like all other excessive interference with the liberty of the subject by authorities local or imperial, the details of the Bill will, if enacted, probably fail, and give more occasion for such remarks as that of the Alderman's critical working man who spoke of the unhousing of the Working Classes Act.

Light and Air in London Slums.

From ROBERT WILLIAMS [A.]—

For the purpose of some lectures which I am now giving on "Light, Air, and Space in relation to Workmen's Homes," I have prepared some large coloured diagrams, showing how, under the present Act, a slum is built, and showing, by contrast, how the new Bill would remedy this. Should the Institute care to use these diagrams in its deliberations they are at its disposal, with the exception of two dates, viz. the 15th inst. and March 7. How urgent a matter this light, air, and space question is may be gauged from the last census returns, which show that in London alone no fewer than 484,395 persons were living in 136,091 rooms—that is to say, 3.55 persons to each room! Allowing a space of 225 square feet to each room and its curtilage, this would give for the 107 acres 3,612 persons per acre—or about one and a half to a square yard!

Many visits to the crowded quarters of the eastern and southern districts, and visits to the rooms, and conversations with the pent-up working dwellers, have burnt into my heart the desire to do what in me lies to get for these people a little more earth space. No nobler work surely could engage the powers of an architect; and it is from no spirit of antagonism that I have taken up this attitude, but rather that it is irresistibly borne in upon me to do what I can in the matter.

Some Notes on Rhenish Work.

From Mr. CLEMENT HEATON (Neuchâtel)—

As suggesting a line of thought which I will attempt to give expression to in the following note, I send you a sketch of a portion of a window arch of the Church of Saint-Pierre, Geneva. It is a very fine example of what I take to be Rhenish work, and has been formerly overlaid with later masonry. This is probably the part which Fergusson dates as about 950, apparently on the strength of Blavignac's work. But this was published in 1853, and later discussion seems

to have determined a later date—the middle of the twelfth century. After having been accustomed to English Gothic detail by daily contact with examples, the contrast remarked by seeing examples of this Rhenish detail is considerable. One has the feeling of being in presence of a new set of ideas—a feeling which gathers strength with familiarity. In view of what Fergusson says of the style [*History of Ancient and Medieval Architecture* (ed. 1893), vol. ii. pp. 211, 212],



WINDOW ARCH, SAINT-PIERRE, GENEVA.

some notes on it generally may not perhaps be uninteresting.

It recalls the Norman work we have in England to some extent, but it is more refined in scale, a different set of *motifs* prevail, and it is more carefully executed. It is, in fact, a higher class of work in every respect, though it varies in excellence according to date and locality. Its parentage appears certainly to be the Byzantine work, and as this is the continuation of Greek tradition, it is practically the continuation of the principles started

in Assyria, coming through Greece, Byzantium, and Germany. As the Princess Theophanie introduced enamelling into Germany from Byzantium on her marriage with Otho in 973, it seems reasonable to suppose other traditions were brought in at the same time. It was at this epoch that goldsmiths' work was so highly esteemed—indeed, it seems evident this goldsmiths' work constituted the ideal of all that was precious or beautiful at this age. Does not this explain the presence in stone of such metallic-like treatment and *motifs*? The "ties" round foliage stalks, and the interlaced band-work find a natural origin therein. As it is the fact that Irish MS. designs were suggested by enamelled metal-work, that in Egypt and Assyria *motifs* of ornament are also directly traceable to metal-work, it seems natural enough it should be so here. In any case this stone carving has a most delicate fretted look, giving the coarsest material an appearance of richness and value.*

It would not be an unprofitable study to examine the principles which led to this, for they constituted the mainspring of action to whole peoples and epochs, and are available now as much as ever, offering a path to new developments of architectural adornment with safety and success. They are the reverse of those of all our Gothic ornaments—for whereas Gothic work has raised relief as its prevailing (though not exclusive) character, this Rhenish work is concave with raised edges, giving a surface of raised lines catching the light, concave surfaces with gradated shadows, and spicy bits of black between the lines. The contrast of line and shadow and black points is perfect, and in bright sunshine or dull weather holds its own and never looks tame. This is not an accidental mannerism, but a definite system of work, adhered to in the coarsest examples. The same characteristics are present in the capitals illustrated in Mr. Simpson's Paper [pp. 97, 98], and in Indian and Oriental work generally.

A Short History of Mosaic Decoration.

A perusal of the practical contributions, last Monday [pp. 245–262], to the study of Mosaic decoration and Fresco painting may be profitably followed by reading *La Mosaïque Chrétienne pendant les premiers siècles*, which originally appeared in the *Mémoires* of the National Society of Antiquaries of France (52nd volume) and was published last year in pamphlet form by its author, M. Eugène Müntz [*Hon. Corr. M.*], the learned Curator of the École des Beaux-Arts, Paris. The pamphlet, which contains some ninety octavo pages, fully illustrated, is divided into two parts; (1) "La Technique" and (2) "La Mosaïque dans les Catacombes." The first part is accompanied, as

an appendix, by extracts from a manuscript in the Barberini Library entitled "*Ricette per fare vetri colorati et smaltati d'ogni sorte havuta in Murano, 1536.*" These "*ricette*" or "*recettes*" or "*recipes*" are stated by M. Müntz to differ notably from those of the fourteenth and fifteenth centuries published by Signor Milanese—*Dell'Arte del Vetro per mosaico*, 8o. Bologna 1864—in the fifty-first volume of the *Scelta di Curiosità letterarie*. Though the orthography of the manuscript is stated to be in a horrible Venetian dialect, and certain passages are almost unintelligible, M. Müntz has been able to give a literal copy, which he guarantees exact (pp. 56–61).

The second part of the Pamphlet, the mosaic work of the catacombs, is particularly interesting from the large amount of information on the subject it contains, reduced to readable compass, and duly accompanied by minute references to authors cited.

M. Müntz attempts at an early stage to controvert an impression generally well accredited. Glass mosaic, he says, is thought to be essentially of Christian origin, and is often called Byzantine mosaic; while marble mosaic is considered to be the only kind of incrustation used by what may be called classical antiquity. This, says M. Müntz, is a singular exaggeration. The use of enamels (*pâtes d'émail*) was already very general in the first century of our era, as may be proved by innumerable fragments preserved, among others, at Pompeii, exclusively composed of tesserae of enamel similar in all respects to those seen in Christian basilicas. At the Museum of Naples, for instance, among objects obtained from Pompeii, there are columns (of brick or rough masonry) incrustated with such tesserae; and M. Müntz contends that incrustations of glass or of enamel were known to the Egyptians, as may be tested by examples preserved in the British Museum. At Turin, in the Museum, there is a coffin upon which are hieroglyphs filled in with glass.

REPLY.

Helmingham Hall [pp. 25, 59.]

Under the head of "Queries" in the issue of 9th November last, information was desired respecting the interior of Helmingham Hall, and plans, sections, and views were asked for. The Hall is one of the finest specimens of a moated residence in the country; and, by the kind permission of Lord Tollemache, a member of the Suffolk Institute of Archaeology has taken a series of views both of the exterior and interior, and he would be happy to supply copies. His views do not at present include Queen Elizabeth's bedroom, which when he was there was not available for the purpose; but he has his lordship's permission to go over again and photograph the room, and he hopes to avail himself of the kind offer during the summer months.

* Traces of traditions of Roman work are also met with, and in some cases the interlaced work seems of Irish origin, so there is considerable complication.—C. H.



9, CONDUIT STREET, LONDON, W., 15 Feb. 1894.

MINUTES. VIII.

At the Eighth General Meeting (Ordinary) of the Session, held on Monday, 12th February 1894, at 8 p.m., Mr. J. Macvicar Anderson, *President*, in the chair, with 33 Fellows (including 10 members of the Council), 30 Associates (including 1 member of the Council), 1 Hon. Associate, and several visitors, the Minutes of the Meeting held 29th January 1894 [p. 240] were taken as read and signed as correct.

The following candidates for membership, whose admission to candidature had been approved by the Council, were recommended for election, namely:—As FELLOWS: John Perrins Osborne [A.] (Birmingham), Thomas Batterbury [A.], George Hubbard, Jethro Anstice Cossins (Birmingham), Frank Barry Peacock (Birmingham), Walter Talbot Brown [A.] (Wellingborough), James William Fisher (Wellingborough), David Jenkins [A.] (Llandilo), Howard Chatfield Clarke, Joseph Morris (Reading); As ASSOCIATES: Charles Kempson (Leicester), Harry Barnes (Sunderland), John Ernest Mowlem (Swanage), Henry Dearden (Batley), Edward Box Wetenhall, Ernest Robert Barrow (*Ashpitol Prizeman 1893*), William Henry Ashford (Rhayader), Arthur William Sheppard, Harold Clapham Lander (*Student 1892*), David Forbes Smith (Salisbury), William Tillott Barlow, Francis Peter Halsall (Southport), George Ernest Nield, John Robert Earnshaw (Manchester), Franklin Kaye Kendall (*Student 1892*), Roger Francis Bacon (*Student 1892*) (Reading), Harry Evan Jones, John Rennison Little (Bolton), Arthur James Forge, Frank Lishman, Arthur Hill Morgan (Hoolet), Douglas George Salier (Tasmania), John Lloyd Houston, George Harry Mael Trew, John Humphreys Jones, B.A. Lond., John Newnham, William John Childs (New Zealand), Alfred Kirk Brown (Hull).

The following Fellows, attending for the first time since their election, were formally admitted, and signed the Register, namely:—Charles James Smithem and William Larnar Sugden.

The President gave notice, in accordance with the provisions of By-law 40, that an election to the office of Associate-Auditor would take place at the next General Meeting to be held 26th February 1894, and that the said election would be decided by Resolution of the Royal Institute, Mr. G. A. T. Middleton [A.], who was elected to the office last year, having resigned it.

Pursuant to notice given, the President having moved and Professor Kerr [F.] having seconded, it was

RESOLVED, that the Council of the Institute be instructed to take the necessary steps to lodge a petition to the House of Commons against "A Bill to Consolidate and Amend the Enactments relating to Streets and Buildings in London"—the suggested short title of which is "The London Building Act, 1894"—in order to secure for the Institute a *locus standi* to be heard on the principles and details of the proposed measure before any Select Committee that may be appointed for the purpose.

It was further, on the motion of Mr. J. Tavenor Perry [A.],

RESOLVED, that a General Meeting of the Institute be convened for the purpose of discussing points of the Bill, and advising thereon.

In regard to the award of the Royal Gold Medal for the current year, the Hon. Secretary having read By-law 64, the President announced that the Council proposed to submit to Her Majesty the name of Sir Frederic Leighton, P.R.A. [H.A.], as a fit recipient of that honour.

Papers on MOSAIC AND FRESCO by Mr. C. Harrison Townsend [F.], Mr. James C. Powell, Mr. G. Salviati, and Mr. N. H. J. Westlake having been read and discussed, a vote of thanks to the authors and to the several exhibitors of illustrations on the subjects thereof was passed by acclamation; and Mr. Powell having acknowledged it, the Institute adjourned at 10.15 p.m.

Errata.

Page 238, Review No. 17, line 4 of text, for "The Norse Symbol" read "The Norse Symbol."

Page 239, 1st column, line 20 from top, for intuition read intention.

PROCEEDINGS OF ALLIED SOCIETIES.

CARDIFF: ANNUAL DINNER.

On the 1st inst. the Annual Dinner of the Cardiff, South Wales, and Monmouthshire Architects' Society was held at the Angel Hotel, Cardiff, the President, Mr. E. Seward [F.], in the Chair. Among the guests of the Society were the Mayor of Cardiff (Mr. Councillor Frounce), Mr. J. M. Brydon [F.], representing the Council of the Institute, the Chairman of the Cardiff School Board (Mr. Lewis Williams), the Vicar of St. John's Church, Cardiff (the Rev. C. J. Thompson), Mr. T. Forster Brown, Mr. T. H. Thomas, Town Clerk and Borough Engineer of Cardiff, and others. After the usual toasts, Mr. T. Forster Brown proposed "The Cardiff, South Wales, and Monmouthshire Architects' Society," and referred to the enormous improvement in the condition of the houses of the working classes in the matter of ventilation, sanitation, &c., brought about through the efforts of the architectural profession. The Hon. Secretary, Mr. J. Coates Carter, then gave a short retrospect of the work of the Society from its commencement in 1890. The Society, he said, was originally started, under the title of the Cardiff Architects' Society, for the purpose of promoting friendly feeling and intercourse among the members of the profession in practice in Cardiff. It was soon found necessary, however, to extend its scope. As a first step they offered prizes for measured drawings and sketches, open to all architectural students in their district, of which the results so far had been most excellent. Last year the Society was extended to include the whole of South Wales and Monmouthshire; and architects' pupils and assistants were admitted as Associates of the Society, but took no part in the business meetings. Application was then made to the Council of the Royal Institute of British Architects to be constituted one of the Societies allied to that body, which application was at once granted. Mr. Carter further pointed out that besides the gratification afforded to members of having the Central Society of the profession officially represented that evening—in the person of Mr. Brydon, who was doubly welcomed as an architect whose work most of those present knew and admired, and also as a member of the Council of the Institute—they had this substantial advantage, that in future the local examinations of the Institute could be held in Cardiff, and thus much time and money would be saved to young architects from South Wales.

The alliance with the Institute, which appeared very popular amongst the members of the Cardiff Society, was again referred to by the President in responding to the toast, particularly the Society's improved status, the opportunities for usefulness it now commanded, and the direct and solid advantages which would accrue to its students. Mr. J. M. Brydon, responding to the "Kindred

"Arts and Sciences," commented upon the recent alliance of the Society to the Institute, and made suggestions towards a greater community among architects, sculptors, painters, and decorators.

LIVERPOOL: SESSIONAL MEETING.

On the 5th inst., at a Meeting of the Liverpool Architectural Society, Mr. Basil Champneys read a Paper on "The Relations of the Practical and the Ideal in Architecture," of which the following is a summary:—Architecture, no less than the other arts, such as Poetry, Painting, and Sculpture, aims at an ideal result by the use of the material and actual. It differs from the other arts mainly in two respects: the first, that it is far more closely bound than other art by practical conditions; the second, that its use of the actual world is far less direct and more abstract, and consequently far less easy to detect or define.

Art, in order to teach its full development, employs both the physical and the moral world as its material. Nor is it difficult to trace the process in the case of the other arts. Architecture undoubtedly aims at cognate effects, but in a manner less easy to recognise.

The principal elements of architectural effect are form or outline, and proportion. Whether these are founded on innate ideas or are the abstracted results of experience, it is certain that the sense of both may be indefinitely developed by the study of the physical forms of the natural world; and by this means the relation of architectural form to the physical world is established.

It is less easy to see how architecture is capable of expressing ethical ideas, especially if in our analysis we dissociate it from the ancillary arts of sculpture and painting, which arts may readily express such ideas in close association with architecture, though they are not of the essence of the art. We may perhaps detect the expression of ethical ideas more readily in styles than in individual buildings. If we take what are probably the three great styles of the past, Egyptian, Greek, and Gothic, and adopt Mr. Coventry Patmore's constructional analysis of these, we shall find that the essential idea conveyed by them severally is that of weight predominant, weight adequately carried, and weight transformed into aspiring lines. We may, without strain, convert these terms into their ethical equivalents, and consider the styles to be expressive of materialism, reason, and spirituality; and thus each great architectural invention will be found to express accurately the essential ideas of the civilisation which gave it birth.

There are also many indications in the terms which we apply to individual buildings of their capabilities of expressing moral, philosophical, or religious ideas.

If, then, architecture, notwithstanding its strict servitude to practical requirements, is capable of compassing the same ideal intention as the other arts, its claims as an art should be of the highest kind, and its ideal aims should be emphasised both in theory and in practice. Its practical achievements should be considered only as a means to a higher end; and all methods which tend to confound it with purely practical avocations should be rigidly discouraged as calculated to obscure its ideal aims in the mind both of the public and of those who practise it.

LEEDS AND YORKSHIRE: SESSIONAL MEETING.

On the 5th inst., at a Meeting of the Leeds and Yorkshire Architectural Society, the President, Mr. G. B. Bulmer [F.R.I.B.A.], in the Chair, Mr. E. Guy Dawber [A.] read a Paper on "Notes on Some Bavarian Towns." After a few brief introductory remarks in reference to the peculiar interest of the towns and villages in the country around Würzburg, the lecturer gave a graphic description of Rothenburg-on-the-Tauber. Situated on a spur of rock overlooking the valley, it is entirely surrounded by its original wall and towers, over thirty in number, and contains

many buildings and houses of great interest and charm. Founded in the tenth century, with frequent enlargements during the Middle Ages, it retains most of its original features intact, and perhaps no town in Europe impresses one with such an air of Mediaevalism as Rothenburg.

The fine Renaissance Rathhaus on one side of the market-place is a typical example of the municipal buildings in Southern Germany at this period, with its high pointed roof, gabled at either end, and very strongly marked horizontal strings, contrasting forcibly with the vertical lines striven for in the buildings of Northern Germany. The larger houses in the principal streets are simply designed, and generally with plain gables, but containing open courtyards behind of great beauty and picturesqueness. The smaller houses are built of timber, entirely covered with plaster, the common method of building in this part of Bavaria. The fountains in the streets, the wrought-ironwork and beautiful window grilles are very noticeable, and the peculiarity of the large entrance towers and gateways, having one side of the tower originally open to the town—probably so that means and weapons of defence could be handed up, or commands given to the inhabitants below, during periods of siege. The villages in the district are very picturesque, the houses being built of timber and plaster, and painted in various colours, and the roof invariably covered with red tiles.

Würzburg was described, with its beautiful bridge spanning the Main, and rows of large statues of the Bishop-princes who once ruled this part of the country. The Rathhaus is one of the most striking buildings in Würzburg. Dating from the fourteenth century, it is absolutely plain, and has a large square tower without mouldings or decoration of any kind, until the top, when a pilastered and corbelled storey carries an octagonal roof and open cupola of very beautiful design. Modern ideas and innovations have swept away most of the older work in this city.

Aschaffenburg-on-the-Main has some excellent domestic work of a quiet and refined character, but the glory of the town is the magnificent palace, standing on a noble terrace overlooking the river. Built, in the early part of the seventeenth century, of red sandstone, in the form of a square, it has four large towers at the angles, carried up with bold mouldings into octagons, and thence into tall open cupolas. The roofs are covered with small grey slates, bleached and weathered to a beautiful silver-grey colour.

Slates now rapidly begin to take the place of the red tiles used in Bavaria, and the slate roofs and walls and methods of hanging were dealt with in detail by the lecturer. They are chiefly obtained from the quarries around Caub, on the Upper Rhine, whence they are sent to all parts of Germany and other countries, reached by its tributary waters. Frankfurt contains some beautiful examples of slate hung houses, the various designs and ways of hanging being well worthy of study. The softness and texture of these large roof and wall surfaces covered with small slates seem perhaps preferable to our English way of using such large ones, sometimes entirely out of scale with the walls below.

The lecturer, in conclusion, touched upon the earlier buildings in Southern Germany, when built of rubble stone, being entirely covered with plaster, and instanced many examples of old buildings, untouched from their commencement, and yet possessing unmistakable evidences of having been entirely plastered, and, on the sides not exposed to the weather, still retaining the plaster intact. The bulk of the buildings in Rothenburg, Würzburg, and other towns and cities are plastered, and, from evidences seen, coeval with the time they were built.

MANCHESTER: SESSIONAL MEETING.

On the 6th inst., at a Meeting of the Manchester Society of Architects, the President, Mr. E. Salomons [F.R.I.B.A.], in the chair, a Paper was read by Mr. H. W. Chubb,

Assoc.M.Inst.C.E., entitled "The History and Development of Locks and Safes," the subject being treated from two points of view, the mechanical and the artistic. The method adopted by the Greeks for fastening and bolting doors was described; and the hook or sickle-shaped key probably used by them had been discovered in various parts of France and Germany; a key of similar pattern found by General Pitt-Rivers at Lewes was ascribed by him to the late Celtic period. The Phœnicians might have been the agents of its distribution. In some forms of this key appeared the mechanical embryo of the Egyptian lock. Though little direct evidence existed about Egyptian locks, one was shown in a bas-relief at Karnac; and on a wall-painting in the Temple at Abydos, Rameses II. was depicted in the act of opening the door of a shrine by means of a golden key formed like a human hand and arm. A comparatively modern key brought from Cairo was shown by the lecturer, in which the shank of the key was the arm, and the pegs the fingers of the hand.

Some primitive wooden locks to be seen in use at the present day in places so far apart as the Hebrides and Faroe Islands, and the less frequented parts of Galicia, Roumania, and Servia, had also been observed on the West Coast of Africa. The Roman padlock, so styled, was now almost in universal use in China; and the lecturer questioned if it were not rather of Celestial origin. A very curiously shaped Chinese lock of modern construction was described to be almost exactly similar to old Roman locks preserved in the British Museum. A simple device which the lecturer pointed out in two antique bronze keys dug up in London formed the subject of present-day patents, and not a year passed without some enthusiastic inventor re-discovering it and offering to part with his idea for a consideration. A class of Roman keys quite unique were those attached to finger-rings; several of these were exhibited by the lecturer, who himself was wearing one in which the key folding behind the signet opened several locks *en suite*. Keys and locks in use in various countries in mediæval times were described in detail; a locking bolt of the thirteenth century, to be seen on the cathedral doors of Chartres, Rouen, and in some of our own cathedrals, having been met with by the lecturer on the door of the inner temple building at Kandy, where the piece of ivory called Buddha's Tooth is kept. The fifteenth and early sixteenth centuries produced the most beautiful specimens of keys, the Germans excelling more particularly in the decoration of lock plates. These appear to have been so highly prized that their owners carried them from place to place as they changed their residence. Coming to later Renaissance work, the lecturer quoted from Mathurin Jousse's book, published in Paris in 1627, in which the art of the period is well and graphically described and illustrated. A good idea of the keys of the eighteenth century could be gained from Chamberlain's collection, presented to the British Museum by Mr. Octavius Morgan in 1888.

The lecturer then dealt with the second part of his subject—boxes, safes, and strong-rooms—in which the interest centred more upon modern work. The ingenuity of safe-makers had to be constantly at work to baffle the army of skilful burglars. The various systems of strong-rooms and safe deposits at present in use were described, the more important being fitted with the chronometer lock, commonly called a "timer," an ingenious contrivance which controls the bolts independently of the keyless combination locks. The owner, when closing his door for the night, sets his time-lock to run off guard at any hour he selects the following morning. If a burglar, either by force or fraud, obtains the secret of the numbers of the combination locks, he cannot open the safe if the "timer" be on guard. These may be set to run seventy-two hours. The lecturer further dealt with the materials used and mode of construction, and concluded with a reference to

the application of electricity as affording additional means of security. Several wall diagrams, specimens of old locks, and various mechanical models were exhibited during the lecture.

THE ROYAL ACADEMY OF ARTS.

The Advancement of Architecture.

Professor Aitchison's second lecture on the Advancement of Architecture was delivered on the 1st inst. The following are a few extracts:—

Most buildings have some special use for their main ends; the distinction between them is the relative proportion between the parts for emotional and unemotional use. The commonest sort of buildings are wholly for material needs, and buildings gradually rise in position as the emotional parts prevail over the material. Religion, however, has been, and must always be, the mother of architecture in its highest sense; for beyond providing for the ritual, the whole cause of the building is to raise the highest emotions. I cannot conceive man ever being without religion; by it his natural curiosity about himself and the universe is attempted to be satisfied, the question of what is happiness is defined, and he is shown how he may try to attain it; by it he is taught to bear the terrible ills with which life is fraught, and how to purge his soul from guilt. A cube, with a recess for the altar, was the shape chosen by the early Christians for their church. The shape we now have is mainly accidental. Constantine saw in his vision a cross, and he presented the Christian community of his day with the unused Basilica of Lateranus, in which the Christians saw the law, or primitive cross, in the junction of the transept in front of the judgment seat with the nave.

The Roman Church greatly enlarged the early Christian symbolism, and either invented, or adapted from the Pagans, an elaborate ritual, both grand and impressive. No one who has seen the open-air service of the Corpus Domini at Venice can fail to have been struck by its grandeur and solemnity. From the left door of St. Mark's the procession emerges; besides the officiating priests bearing candles, each confraternity of Venice sends some at least of its number, dressed in the handsome costumes of the sixteenth century, who bear on their shoulders a tray, or baldachin, containing the sacred relics in their gold and silver cases, enriched with enamel or jewels. Each confraternity is accompanied by children dressed as cherubs, or personating the childhood of the holy personages of Scripture, leading lambs, kids, or a donkey adorned with flowers. In the centre of this procession is the Patriarch of Venice, with the attendant priests and acolytes, sumptuously attired. By the time the procession has brought the Patriarch to the centre of the square, the foremost group has passed under the Procuratie to the right door of St. Mark's; the Procuratie is lined with sightseers, and the open square is crowded with gondoliers, peasants and their families, all dressed in their holiday attire. At the end of the celebration of the Mass a bell is rung as the Host is elevated and incensed, and then the whole crowd fling themselves on to their faces or knees in the blazing sun. The effect of this sudden and united adoration of the multitude is quite electrical, and, when once seen, can never be forgotten. . . .

The want of grand houses to mark the gratitude of the nation to its great men is only one of the proofs of the ignorance of our statesmen of the value of fine arts. No one can see Blenheim without being struck with its architectural magnificence as well as its size; and consequently Marlborough's victories over the armies of Louis XIV. are constantly being recalled to the memory of succeeding generations; while Wellington's house is neither large enough nor admirable enough as a work of art to excite attention. It is, however, a house rather more important than a common one, and so can be used by those who know it to point a moral or adorn a tale. We miss, too,

in the fitness of things, a house to Nelson, who did quite as much for the preservation of England as Wellington himself. Of course, the saving of the nation from conquest is the most important service a man can render to his country; though I cannot help thinking that diplomatists, who secure this end without the horrors of war, are quite as deserving. I suppose the State has a right to restrain its public honours to soldiers, sailors, and diplomatists; but even to them the presentation of a really fine house is the most useful and enduring memorial of the nation's gratitude. Wealth is due to these great men, as they have preserved that of the whole country; to be made equal with the highest of the living is not much, for they are already their superiors; bronze statues make their personality known, but in any popular commotion these may, like the statues of the great Sejanus, be turned into coal-scuttles and warming-pans.

There are, however, other great men who not only confer benefits on their own country but on the world at large, who, I think, might too be honoured in this way during their lifetime. Their achievements are not so striking at the time, nor are they so forcibly brought home to every one as victories are; consequently their works, discoveries, or inventions are only fully appreciated after their death. Shakespeare and Milton, Bacon and Locke, Inigo Jones and Wren, Newton and Dalton, Watt and George Stephenson, Reynolds, Constable, Turner, and Flaxman, have done more for their country than any conqueror; for they have not only enriched and immortalised their country, but have helped forward every other civilised nation.

It might be supposed that the leaders of labour—I do not mean the misleaders—would desire to celebrate their well-earned fortunes by magnificent houses; but, like those successful in fraud and adulteration, they are mostly content to enshrine themselves, their achievements, and their wealth in the ready-made house of the speculative builder. Poverty, the leasehold system, want of sense, and want of taste keep London very free from magnificent houses. . . .

I cannot help thinking that, if the outside of isolated public buildings were made the outcome of the inside, they would differ greatly from those formerly in fashion here. Then the architect's idea was to make a box, and sometimes a very beautiful box, into which the group of buildings was put; but under such conditions it was impossible to judge the purpose of the building from the outside. Some eminent architectural critics say that to insist on the outside being the outcome of the inside is a most pestilent heresy; they contend that a beautiful front is wanted to excite admiration, and, if this be achieved, what more can be desired? In answer to this, it may be said that a building designed on such principles does not emulate one of Nature's organisms.

It may now be well to consider of what a building consists when looked at from the outside. It consists of walls and a roof, unless the roof be flat or hidden, and then of walls only. If there be windows, we conclude there must be a roof. It may be as well to speak of the doorway before the windows; for if Dr. Dörpfeld's theory, that Greek temples were lit only from the door, be the true one, windows were not wanted, and the size of the doors must have been proportioned to the spaces to be lit. Doorways in mediæval buildings were sometimes used for lighting, as at the Lower Church at Assisi. In Gothic cathedrals the height of the doorway is said to have been regulated by the height of the banners carried in procession. . . .

A balcony is not a bad thing if we have a garden or a prospect to look at, and a fine day; occasionally it is agreeable in a street, if you want to address the mob, to see a fight or a procession, and it is admirable for catching cold in at an evening party; but unless you go down to it by a flight of steps it spoils the appearance of all the windows behind it.

In Venice, that city of balconies, there were constant processions on the wider canals that were lined with palaces, and the water and its reflections alone form a lovely picture to look at.

Parapets or balustrades are necessary where there are flat roofs, not only to prevent persons falling off, but to give the real scale of man to a building. I cannot commend those gigantic balustrades that are put up as a finish to a front, as they destroy the scale of the building, nor those of ordinary size used to hide mean roofs, that are perched up so high that when you are in the gutter the bottom of the balustrade is level with the crown of your hat.

THE PLANNING OF THEATRES.

On the 13th inst., at the monthly meeting of the Glasgow Architectural Association, Mr. Alexander McGibbon [A.], President, in the Chair, a Paper was read by Mr. William Tait Conner [A.] on "Planning of Theatres." After a short sketch of the development of theatre planning, the regulations laid down by various countries for the erection of theatres, and the restrictions as to site, were next considered. The only perfect site was said to be an isolated one, and with a slope towards the stage in preference to being level, as this effects a saving in excavation and facilitates the drainage; and simplicity of plan was urged as being essential, so as to be easily grasped by the audience. The remarks on planning were divided into the following heads: Approaches, consisting of entrances, exits, and staircases; the auditorium and its fittings; and, lastly, the stage, comprising dressing-rooms, scene-docks, &c. In regard to entrances, it was recommended that the audience should be admitted by a special passage till the pay-box was passed, and then discharge into the main corridor, thus leaving it free at all times for exit. The various descriptions of barriers for reducing the width of passages for entrance and lifting checks were described, also the position of pay-boxes and booking-office. Exits should be as short as possible and free from everything of a movable character, two, at least, being provided for each part of the house. All doors should be fitted with automatic panic bolts, and have the word "Exit" above in plain letters. Staircases should not be in long straight flights, nor yet too short, twelve steps being considered the maximum and three the minimum number; the landings should be the full width of the staircase and never broken by single steps, the rise and treads being kept uniform throughout, two staircases at least to be provided to each section of the house. In dealing with the auditorium, the substitution of cantilevers for supporting the balconies in place of columns was considered the greatest improvement in theatre construction within recent years. The arrangement of seats and gangways in relation to local by-laws was pointed out, and various patent seats described. The dimensions of the seating in the different parts of the house and the sighting were also touched on. The auditorium should be well provided with windows, and balconies with escape stairs were also recommended. The necessity of making the entire building as far as possible fire-proof was emphasised. In connection with the stage, it was shown how its dimensions were governed by the height and width of the proscenium opening. The position of the scene-docks, dressing-rooms, stage entrances, workshops, &c., were explained, and diagrams showing the arrangement in some of the most modern theatres were exhibited. It was strongly urged that all theatres should be supplied with a fire-proof curtain; those of the iron lattice type covered by some incombustible material, sliding in iron guides and worked by hydraulic power, were recommended. The lighting, heating, and ventilation were briefly alluded to. The Paper was illustrated throughout by diagrams and photographs thrown on the screen by lime-light.

